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ABSTRACT

This publication reports on research conducted to follow up on a 1997 survey of public libraries and the Internet, co-sponsored by the National Commission on Libraries and Information Science and the American Library Association. The 1998 survey is based on a sample of 2,500 of the nation's 15,718 public library outlets. The survey found that 73.3% of public library outlets now offer public access to the Internet. However, only 68.6% offer graphical public Internet access to the World Wide Web (WWW) and only 45.3% offer graphical public access to the WWW at speeds of 56 kbps or greater. The first section contains background information: the Telecommunications Act of 1996; public policy debate; information technology, Internet and the digital economy; and public libraries as a public point of Internet presence. The second section presents the results of the 1998 survey: availability of public Internet access; public Internet access for areas with varying levels of poverty; public Internet access for urban, suburban, and rural areas; graphical public Internet access; bandwidth as a component of public Internet access; defining effective public Internet access; key measures connectivity and public Internet access, 1996-1998; number of graphical workstations as a component of effective access; use of filtering software and availability of an acceptable use policy for public Internet access. The third section discusses findings, policy issues, and commission responses: supporting ongoing surveys on public libraries and the Internet; initiating a dialog on effective public Internet access; and identifying policy questions and promoting additional research. The last section is a bibliography of 8 statistical studies funded by the commission. Five appendices contain: summary results; the survey instrument; the survey methodology; the survey results; and the contractor's analysis of the survey results. Includes 56 tables of figures.(DLS)

ED 429 601

U.S. NATIONAL COMMISSION ON LIBRARIES AND INFORMATION SCIENCE

Moving Toward More Effective Public Internet Access:
The 1998 National Survey of Public Library Outlet Internet Connectivity

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
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1110 Vermont Avenue, NW, Suite 820, Washington, DC 20005-3522
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The National Commission on Libraries and Information Science is a permanent, independent agency of the federal government, established in 1970 with the enactment of Public Law 91-345. The Commission is charged with:

- advising the President and the Congress on the implementation of policy;
- conducting studies, surveys, and analyses of the library and informational needs of the nation;
- appraising the adequacies and deficiencies of current library and information resources and services; and
- developing overall plans for meeting national library and informational needs.

The Commission also advises Federal, state, and local governments, and other public and private organizations, regarding library and information sciences, including consultations on relevant treaties, international agreements and implementing legislation, and it promotes research and development activities which will extend and improve the nation's library and information handling capability as essential links in the national and international networks.

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The views, opinions and recommendations expressed in the body of this report are those of the U.S. National Commission on Libraries and Information Science, and not necessarily those of the American Library Association or its members. The views, opinions and recommendations in the appendices to this report are those of the contractors, Dr. John Carlo Bertot and Dr. Charles R. McClure, and do not necessarily reflect the official position or policy of the research sponsors.

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U.S. National Commission on Libraries and Information Science

Moving Toward More Effective Public Internet Access:
The 1998 National Survey of Public Library Outlet Internet Connectivity

A Report Based on Research Sponsored by the U.S. National Commission on Libraries and Information Science and the American Library Association and Conducted by John Carlo Bertot and Charles R. McClure

U.S. National Commission on Libraries and Information Science
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United States National Commission on Libraries and Information Science

March 1999

The President
The White House
Washington, DC 20500

The Vice President
United States Senate
Washington, DC 20510

The Speaker of the House of Representatives
United States House of Representatives
Washington, DC 20515

Dear Mr. President, Mr. Vice President and Mr. Speaker:

In fulfilling the Commission's statutory mission to advise the President and the Congress on the library and information needs of the public, I am pleased to present *Moving Toward More Effective Public Internet Access: The 1998 National Survey of Public Library Outlet Internet Connectivity*. This report is based on research sponsored by the National Commission on Libraries and Information Science and the American Library Association. The research was conducted at the Commission's request to follow up on the 1997 survey of public libraries and the Internet, also co-sponsored by the National Commission on Libraries and Information Science and the American Library Association. This report also uses information from the 1994, 1995 and 1996 studies sponsored by the Commission on the same topic.

The 1998 survey is based on a sample of 2,500 of the nation's 15,718 public library outlets. For purposes of this survey an outlet is a main or branch library (bookmobiles are excluded). The survey found that 73.3% of public library outlets now offer public access to the Internet. However, only 68.6% offer graphical public Internet access to the World Wide Web and only 45.3% offer graphical public access to the Web at speeds of 56 kbps or greater.

The earlier surveys measured Internet access in approximately 8,900 public library systems. A library system is a main library and its branches. From those surveys we know that 60.4% of public library systems offered public Internet access in 1997, although only 52.1% offered graphical public Internet access. This was up from 27.8% of library systems offering public Internet access in 1996, with only 23.7% able to provide graphical public Internet access.

Despite the change from a survey of public library systems to a survey of public library outlets, we believe that the trend is clear and the progress is substantial. Nevertheless, the 1998 survey identified significant gaps that continue to concern us.

This report, *Moving Toward More Effective Public Internet Access*, raises pertinent questions about unequal distribution of Internet access among libraries serving rural, suburban and urban populations. It also addresses for the first time the concept of *effective public Internet access*, including access to the World Wide Web on workstations with sufficient capability and at speeds of 56 kbps or greater, as well as having a sufficient number of workstations for the population to be served.

In the Commission's letter to the President transmitting the results of the first survey of public libraries and the Internet in June 1994, we stated:

> The Commission is concerned that public libraries offer advanced telecommunications and information services that benefit local communities. Just as they have offered open access to recorded knowledge since the earliest days of our nation's history, public libraries have a vital role in assuring that advanced information services are universally available to all segments of the population on an equitable basis.

We know that each of you share our commitment to the critical role of public libraries in assuring broad public participation in the networked environment, and we deeply appreciate your repeated actions and statements confirming that commitment.

This report is transmitted to show the progress we have made toward your goal of having every public library in America connected to the Internet by the year 2000. It also shows the progress we still must make, not just to connect every library, but to make every library a source of *effective public Internet access*.

Thank you again for your continued interest in and attention to networked information services for all citizens of this nation through libraries and schools.

Sincerely,

Jeanne Hurley Simon

Jeanne Hurley Simon
Chairperson

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EXECUTIVE SUMMARY

Moving Toward More Effective Public Internet Access: The 1998 National Survey of Public Library Outlet Internet Connectivity is a report on research sponsored by the U.S. National Commission on Libraries and Information Science and the American Library Association. The research was conducted to follow up on the 1997 survey of public libraries and the Internet, also co-sponsored by the National Commission on Libraries and Information Science and the American Library Association. The views, opinions and recommendations expressed in the body of this report are those of the Commission, and not necessarily those of the American Library Association or its members.

Dr. John Carlo Bertot, with the School of Information Science and Policy at the State University of New York, Albany, conducted the survey and processed the results in collaboration with Dr. Charles R. McClure of the School of Information Studies, Syracuse University. The views, opinions and recommendations in the appendices to this report are theirs and do not necessarily reflect the official position or policy of the research sponsors.

The 1998 survey is based on a sample of 2,500 of the nation's 15,718 public library outlets. For purposes of this survey an outlet is a main or branch library (bookmobiles are excluded). The survey found that:

- A substantial number of public library outlets have Internet connectivity (83.6%), provide public Internet access (73.3%), and offer graphical public Internet access (68.6%). However, only 45.3% offer graphical public access to the World Wide Web at speeds of 56 kbps or greater.
- Although the poverty level of the population served does not seem to be a significant factor in determining the availability of public Internet access, metropolitan status does: rural libraries lag behind other types of libraries in providing Internet access. Only 67.6% of rural public libraries offer public Internet access which places these libraries 9.1% behind suburban libraries and 16.4% behind urban libraries.
- Nearly one-third (31.4%) of the library outlets currently offer no graphical public Internet access. 28.3% of the outlets have only one graphic workstation for public Internet access and 14.3% have only two graphic workstations. More needs to be learned about what constitutes an adequate number of public access Internet workstations in a library. Nevertheless, in many libraries, one graphic workstation for public Internet access is likely to be inadequate to meet public needs.
- The Commission believes that achieving universal Internet connectivity is not enough. Libraries need to implement *effective public Internet access*, offering graphic capability, as well as sufficient speed, workstation functionality, and staff support to meet local needs.

The Commission understands that questions regarding *effective public Internet access* will require dialog among a number of parties. Since there are a variety of perspectives that federal agencies and departments can bring to bear on this question, the Commission will coordinate within the federal sector to assess what constitutes a minimal level of *effective public Internet access*. Based on this

assessment, the Commission will advise the President and the Congress about the types and levels of support necessary to achieve *effective public Internet access*.

The Commission recognizes that the advent of the discount rate for telecommunications services authorized by the Telecommunications Act of 1996, popularly known as the E-Rate, and the importance of the Internet as a national resource ensure that questions about *effective public Internet access* will continue to be debated at the federal level for the foreseeable future. Nevertheless, the Commission feels strongly that these questions remain primarily issues for local assessment and decision-making. To be successful, current and future national programs for public Internet access, such as the E-Rate, need to be based on guidelines for *effective public Internet access* that allow for the wide variation in local resources and requirements. For these reasons, the Commission will lead a dialog among state and local governments about how to implement and measure *effective public Internet access* in light of varying local conditions, including the degree of existing Internet access among the populations served.

The Commission will continue its support for the annual National Survey of Public Libraries and the Internet to track the evolving state of public Internet access and the implementation of the goals of universal service for public library Internet access.

ACKNOWLEDGEMENTS

The U.S. National Commission on Libraries and Information Science (NCLIS) gratefully acknowledges our partner in funding the research on which this report is based, the American Library Association Office for Information Technology Policy (ALA-OITP).

As with any research project of this scope, there are a number of individuals whose participation contributed greatly to the success of this effort. Dr. John Carol Bertot, with the School of Information Science and Policy at the State University of New York, Albany, conducted the survey and processed the results in collaboration with Dr. Charles R. McClure of the School of Information Studies, Syracuse University. Dr. Dean Jue of Florida State University provided geocoded data for identification of the library outlets and contributed to the development of the study methodology. Andrew Magpantay, then with the ALA Office for Information Technology Policy, also provided guidance and suggestions for the development of the study and for presentation of the data. At the Commission, Judy Russell and Howard Harris reviewed the data and made recommendations for specific analyses as well as preparing this report for publication.

Of course, the Commission also wishes to thank those public librarians who completed the survey. The information they contributed has made it possible to obtain a valuable snapshot of public library Internet service immediately prior to issuance of the first E-Rate funding authorized by the Telecommunications Act of 1996.

MOVING TOWARD MORE EFFECTIVE PUBLIC INTERNET ACCESS:
The 1998 National Survey of Public Library Outlet Internet Connectivity

I. Background

The National Commission on Libraries and Information Science (NCLIS) has a long-standing interest in library statistics. Since 1988 NCLIS has maintained a partnership with the National Center for Education Statistics (NCES) focused on collecting and reporting statistics regarding libraries of various types across the United States. In addition, since 1994 NCLIS has tracked the increasing use of the Internet among public libraries.[1] At first NCLIS supported these studies solely with its own resources. In 1997 and 1998 the survey was funded jointly by NCLIS and the American Library Association (ALA) Office of Information Technology Policy.[2] In each case, the contractors for the research were John Carlo Bertot and Charles R. McClure.[3]

National surveys of U.S. public libraries and the Internet were done in 1994, 1996, 1997, and 1998 during a period in which the Internet has undergone tremendous growth in terms of users, accessible information content, and range of services. The *1998 National Survey of Public Library Outlet Connectivity* was conducted between April and June 1998, against the backdrop of pending universal service support for telecommunications services including Internet access in schools and public libraries. The findings of the 1998 survey provide a very useful baseline of data about public library Internet connectivity prior to the availability of universal service funding.

1. Telecommunications Act of 1996, Universal Service, and Public Libraries

In the Telecommunications Act of 1996 the U.S. Congress recognized the growth of the Internet and the significance of providing individual citizens with access to Internet information content and services. In that legislation the U.S. Congress acknowledged, "the rapidly developing array of Internet and other interactive computer services available to individuals Americans...[as] an extraordinary advance in the availability of educational and informational resources to our citizens" [47 U.S.C. 230]. The Congress also acknowledged the special role of elementary and secondary schools, public libraries, and health care providers in conveying public access to these resources by providing discounted telecommunications services under a program of universal service originally established as a part of the Communications Act of 1934 [47 U.S.C. 254h].

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[1] A bibliography of the reports in this series is available in Section IV.

[2] The views, opinions and recommendations expressed in the body of this report (Sections I through IV)) are those of the Commission, not necessarily those of the American Library Association or its members.

[3] Dr. John Carol Bertot, now with the School of Information Science and Policy at the State University of New York, Albany, conducted the 1998 survey and processed the results in collaboration with Dr. Charles R. McClure of the School of Information Studies, Syracuse University. The views, opinions and recommendations in the appendices to this report are theirs and do not necessarily reflect the official position or policy of the research sponsors.

The Telecommunications Act of 1996 recognizes universal service as "an evolving level of telecommunications services that the [FCC] shall establish periodically under this section, taking into account advances in telecommunications and information technologies and services." The legislation created the Joint Federal State Board on Universal Service and directs the Board and the Federal Communications Commission (FCC) "to consider the extent to which such telecommunication services," among other criteria "are essential to education, public health, or public safety" in establishing the definition of universal service.

The Telecommunications Act of 1996 also directs the Joint Federal State Board on Universal Service and the FCC to base forthcoming policies for the preservation and advancement of universal service on a set of principles that provide some insight into the goals of the program. Among these principles are:

- Access to advanced services in all regions of the nation;
- Access in rural and high cost areas; and
- Access to advanced telecommunications services for schools, health care, and libraries. [47 U.S.C. 254b]

For eligible schools and libraries, the mechanism for implementation of universal service established under the Telecommunications Act of 1996 is through a discount program to assist with the costs of Internet and other telecommunications services. Discounts range from 20 to 90% based on need. The discount rate is popularly called the Equity Rate or "E-Rate" because it will provide equitable access for all communities.

2. Public Policy Debate

As plans have moved forward to implement universal service for schools and libraries, a wide-ranging public discussion of policy issues related to schools, public libraries, and universal service has begun. From some quarters questions have emerged about the need for universal service support for schools and libraries and about the impact that information technology and Internet access can make upon teaching and learning. Other questions have arisen about the mechanisms for assessing and distributing Universal Service Fund support. In addition, some concerns have been raised about appropriate types of safeguards to regulate the content to which adults and children may gain access via the Internet in schools and libraries. Some of these issues may reach resolution in the near term; debate about others may persist for a very long time.

Whether or not the incorporation of information technology in general or of the Internet in particular within the school curriculum has a direct, singular, and positive effect upon student academic performance is a question that will occupy researchers for some time. However, the role which the Internet and information technology play in the overall U.S. economy has become much clearer during the last year. Even more importantly a growing understanding has emerged about the need for education and training for students, the workforce, consumers, and the public in general to function within a rapidly changing technology-based economy and to assist in sustaining its continued growth.

3. Information Technology, Internet, and the Digital Economy

According to *The Emerging Digital Economy*,[4] information technology and the Internet have begun to exert a great influence on the U.S. economy in recent years. This Commerce Department study states

[4] *The Emerging Digital Economy*, U.S. Department of Commerce, Washington, DC, April 1998, p. 1-8, http://www.doc.gov/ecommerce/emerging.htm.

that within four years of its arrival in the open market 50 million people had begun to use the Internet's resources. Radio took 38 years to reach this level of penetration. Television reached 50 million viewers in 13 years. Sixteen years after the appearance on the market of the first PC kit, the microcomputer had claimed 50 million users. This study estimates that in recent years the information technology sector as a whole has contributed close to 15% of total nominal U.S. Gross Domestic Product, has lowered the overall inflation rate by one full percentage point, and has accounted for more than one-quarter of real U.S. economic growth. In 1996 the information technology sector represented 45% of all business equipment investments and it currently employs 7.4 million people at salaries and wages 64% higher than average salaries and wages in the private sector as a whole.

These perspectives on computing, communication, and the Internet do not yet take into account the rapidly emerging global marketplace of electronic Internet-based commerce. Electronic commerce among businesses is projected to exceed $300 billion worth of sales by 2002. For retail sales using electronic commerce the potential market of those who use the Internet is expected by some experts to grow from 100 million in 1998 to one billion by 2005.

These measures of the effect of the digital economy on overall U.S. economic well being have profound implications for efforts to assist all segments of the U.S. population in accessing and utilizing these technologies. Everyone needs to learn how to discern the value, accuracy, and usefulness of information content conveyed via the Internet. For young people obtaining the education, training, and skills needed to participate in the digital economy represents a high priority. For consumers and those in the workforce learning to make informed choices within the wider and wider array of information available through the Internet, including products, services, employment opportunities, and entertainment, is an important issue. For senior citizens knowledge of how to use various information technologies has significant impact in their efforts to communicate with distant family and friends as well as to identify, evaluate, and exercise options about healthcare, insurance, investments, personal interests, part-time employment, and volunteer work.[5]

Two recent studies highlight the gaps between our national aspirations for this new digital economy and the reality of those who remain isolated from participating in this sector of the economy. *Bridging the Racial Divide on the Internet*[6] documents gaps in personal computer ownership and Internet access and use between African Americans and Caucasians as students and as members of the workforce. Some of the policy points made by the authors that appear relevant for libraries include the findings and recommendations that:

- African American students need multiple points of Internet access;
- Educational levels positively influence computer access and Web (Internet) use; and
- Access to Internet accessible workstations in multiple locations translates into greater likelihood of using the Web (Internet).

The second study, *Falling through the Net II: New Data on the Digital Divide*[7] represents work undertaken by the U.S. Department of Commerce as a follow-up to a similar study in 1994. Despite the Commerce Department's finding of significantly increased computer and modem ownership and

[5] Presentation of Jeanne Hurley Simon, Chairperson, National Commission on Libraries and Information Science, at the Forum: The Internet: Empowering Older Americans, Special Committee on Aging, United States Senate, July 16, 1998, http://www.nclis.gov/what/speeches/aging.html.

[6] Thomas P. Novak and Donna L. Hoffman, "Bridging the Racial Divide on the Internet: The Impact of Race on Computer Access and Internet Use, *Science*, 280, April 17, 1998, p. 380 and following. A longer version of the paper is available at http://129.59.210.73/papers/race/science.html.

[7] *Falling through the Net II: New Data on the Digital Divide*, National Telecommunications and Information Agency, U.S. Department of Commerce, Washington, DC, July 1998, http://www.ntia.doc.gov/ntiahome/net2/falling.html.

Internet use between 1994 and 1997, that study finds a persistent and widening gap in penetration of these technologies between income groups, racial groups, and other demographic groups. According to this Commerce Department study "the least connected" include:

- The rural poor;
- Rural and central city minorities;
- Young households; and
- Female-headed households.

Both studies identify geographic and demographic groups that lag with respect to Internet access and emphasize the need for schools, libraries, and community-based access centers (CACs) to provide access to computers and the Internet for those who otherwise lack such access. These studies also emphasize the value that access to computers and the Internet from more than one location (e.g., home, work, school, and library) can have in developing information technology skills and encouraging the use of those skills.

4. Public Libraries as a Public Point of Internet Presence

Based upon recent research, the public library already serves as an important public point of Internet presence and access, which suggests that the library might play a role in bridging the gaps in Internet access which other researchers have identified. The 2nd Annual MCI LibraryLINK® study[8] released in April 1998 found that the public library represents the first choice among a number of other locations as a public point of Internet access outside of home, school, and work. The 3,241 respondents to the survey who used the Internet during the prior six months represented 80.0 million people aged 16 or older in the U.S. and Canada. 15.6 % of those respondents, representing 12.5 million people, reported using the Internet from a location other than home, work, or school. 44.7% of those who used the Internet from a location other than home, work, or school used the Internet from a public library. This means that approximately 5.6 million individuals accessed the Internet through public libraries in the six months prior to the survey.

II. Results of the 1998 National Survey of Public Library Outlet Internet Connectivity

The *1998 National Survey of Public Library Outlet Internet Connectivity* was conducted from April through June 1998 by John Carlo Bertot and Charles R. McClure. It was co-sponsored by the Office for Information Technology Policy of the American Library Association and the National Commission on Libraries and Information Science. The 1998 study builds and expands upon public library Internet data as reported in the 1997 ALA/NCLIS study and the 1994 and 1996 NCLIS research. A sample of 2,500 of the nation's 15,718 public library outlets was selected for this survey. The sample was weighted to represent public libraries servicing areas with varying degrees

FIGURE 1
PUBLIC LIBRARY UNIVERSES UNDER STUDY

1996	8,929	Library Systems
1997	8,921	Library Systems
1998	15,718	Library Outlets

[8] The MCI Library Link study results are available at http://www.mci.com/librarylink/study.htm.

of poverty as well as those with urban, suburban, and rural locations. The survey achieved a response rate of 75.5%.[9]

Earlier NCLIS studies about the library as a point of presence for public Internet access focused on the level of connectivity in place among library systems. A library system consists of a single, independent library or a main library with one or more branch locations or other types of outlets for service, such as a bookmobile. As shown in Figure 1, there are approximately 8,900 library systems in the U.S.[10] The *1998 National Survey of Public Library Outlet Internet Connectivity* departs from the previous surveys in this series by focusing on the level of Internet connectivity at library outlets. For purposes of the 1998 survey, a library outlet is either a main library or a branch, excluding bookmobiles. As shown in Figure 1, there are 15,718 public library outlets in the U.S. covered by the survey.[11]

FIGURE 2
PUBLIC LIBRARY
INTERNET CONNECTIVITY

1996	44.4%	Library Systems
1997	72.3%	Library Systems
1998	83.6%	Library Outlets

Within this report, the terms "library outlet(s)" and "library(ies)" will be used interchangeably, and the term "library system(s)" will always be used when referencing data from the earlier surveys. Also, unless otherwise specified, references to library(ies) will mean public library(ies).

Comparisons between the results of the 1998 survey and previous surveys must be done with great caution due to the differences in universe size and library type under study.[12] The 1998 percentages may be the result of new Internet access for library systems that previously reported no Internet service, or it may result from library systems that had reported Internet service in the main library in prior years that have now extended Internet service to additional outlets. It is probably a combination of both, but the 1998 survey was not designed to collect that data. Despite the differences, these three surveys depict a substantial increase in public library Internet connectivity: from 44.4% in 1996 and 72.3% in 1997 for public library systems to 83.6% in 1998 for public library outlets as shown in Figure 2.[13]

1. Availability of Public Internet Access

The library connectivity reported in Figure 2, however, is not a measure of public Internet access, since it includes libraries that are connected to the Internet exclusively for staff use. Availability of public access to the Internet lags behind connectivity by 10.3%. Figure 3 shows that 27.8% of public library systems had public Internet access in place in 1996. By 1997 60.4% of public library systems

[9] The survey instrument is available in Appendix B. The survey methodology is described in Appendix C.

[10] Bertot, J.C., and McClure, C. R., *The 1997 National Survey of Public Libraries and the Internet: Final Report*, American Library Association, Office for Information Technology Policy, Washington, DC, 1997, page 8; and Bertot, J.C., and McClure, C.R., *The 1996 National Survey of Public Libraries and the Internet: Progress and Issues*, U.S. National Commission on Libraries and Information Science, Washington, DC, 1996, page 6.

[11] Based on Appendix D, Figure 1: Public Library Outlets by Metropolitan Status and Poverty. According to NCES data on public library outlets, there are 16,792 public library outlets, of which 894 are bookmobiles. After subtracting the 894 bookmobiles and addressing other issues encountered by the study team, it was possible to geocode 15,718 outlets.

[12] A bar appears between the 1996 and 1997 data and the 1998 data in each Figure that compares the three surveys in order to emphasize the difference between the survey universes and library types.

[13] Based on Appendix D, Figure 2: Public Library Outlets Connected to the Internet (As a Percentage of All Library outlets).

FIGURE 3
PUBLIC INTERNET ACCESS
IN PUBLIC LIBRARIES

1996	27.8%	Library Systems
1997	60.4%	Library Systems
1998	73.3%	Library Outlets

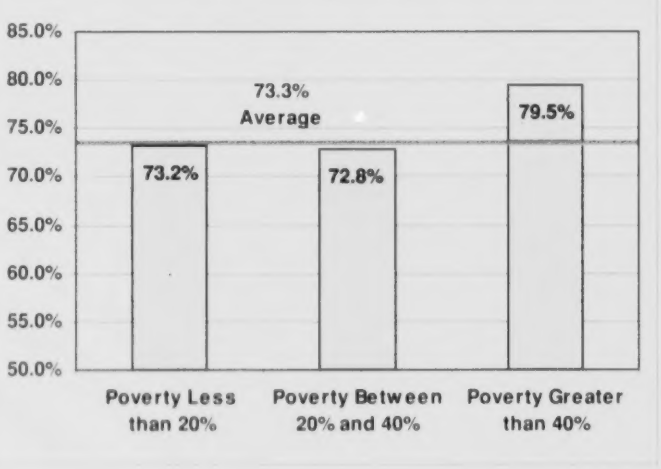
offered public Internet service. In the current survey 73.3% of all library outlets, including independent or main libraries and branch libraries, provide public Internet access.[14]

Historically, providing access to advanced communications and information services to individuals at various levels of income has been an important national goal. This is reaffirmed by provisions of the Telecommunications Act making the availability of advanced communications and information services throughout the U.S. one objective of universal service. Public libraries are the traditional means of assuring broad public access to information services, without regard to income. Figure 3 shows that there has been remarkable progress toward assuring the availability of some level of free public Internet access through America's public libraries in the past two years, before the release of the E-Rate funds authorized by the Telecommunications Act. However, based on the results of the 1998 survey, the Commission concludes that it is too soon to congratulate ourselves for a job well done. There is much work still to be done to define and achieve *effective public Internet access* for all Americans.

2. Public Internet Access for Areas with Varying Levels of Poverty

The 1998 survey represents the first attempt to examine library connectivity by geographic coding of each outlet as urban, suburban, or rural[15] and to understand the disparities in public access to the Internet among libraries in these locations. The 1998 survey also makes a first attempt to study library Internet connectivity in terms of the relative concentration of poverty within the area surrounding the library. For purposes of the 1998 survey that area consisted of the population within a one mile radius from an urban library outlet and within a three or ten mile radius of an outlet in a suburban or rural location, respectively.[16]

FIGURE 4
PUBLIC INTERNET ACCESS BY
SERVICE AREA POVERTY LEVELS



[14] Based on Appendix D, Figure 3: Internet Status for All Public Library Outlets by Metropolitan Status (As a Percentage of All Library Outlets).

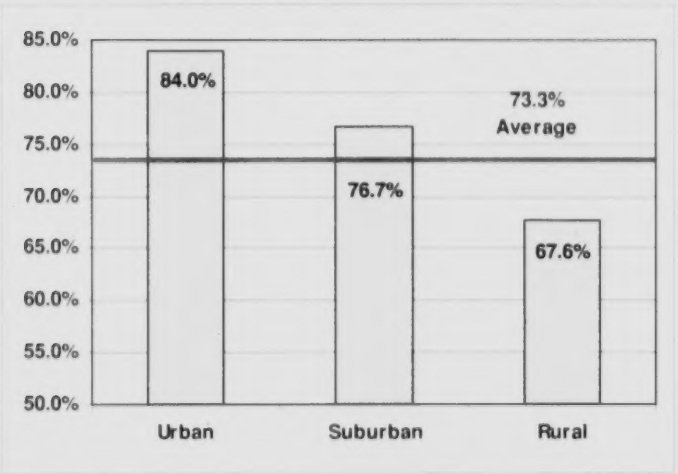
[15] This terminology represents an informal notation for the formal statistical categories provided in Appendix C.

[16] This radius is not necessarily all, or even within, the library outlet's service area. For example, a suburban branch library less than three miles from a city boundary may not be responsible for servicing city residents, but the relative poverty of those residents will be calculated in the geocoding of that outlet location.

Results from the 1998 survey show little variation in public Internet access when comparing libraries with differing poverty levels in the surrounding area, although libraries with poverty levels of more than 40% have a marginally higher level of public Internet access than libraries with a lesser degree of poverty. As shown in Figure 4, 73.2% of public libraries with poverty levels less than 20% in their surrounding area offer public Internet access.[17] By comparison, 72.8% of public libraries with poverty levels between 20% and 40% offer public Internet access, and 79.5% of libraries with poverty levels of more than 40% offer such access. Overall, in 1998 public libraries achieved a 73.3% level of public Internet access availability.

3. Public Internet Access for Urban, Suburban and Rural Areas

FIGURE 5
PUBLIC INTERNET ACCESS BY
SERVICE AREA METROPOLITAN STATUS



A substantial difference does exist with respect to public Internet access through public libraries in terms of metropolitan status. As shown in Figure 5, in 1998 84.0% of urban public libraries and 76.7% of suburban libraries offered public Internet access while only 67.6% of rural public libraries offered such access.[18] These percentages reflect a significant difference with respect to public Internet access. The finding that public Internet access in rural areas lags significantly behind that found in urban and suburban areas is consistent with findings regarding the state of individual Internet access as reported by the Commerce Department.[19] Lagging wireline telecommunications infrastructure and a less competitive telecommunications market both may contribute to such a lower overall level of access. Suburban and urban libraries situated in more densely populated areas benefit from better access to traditional wireline telecommunications infrastructure and from greater competition among potential service providers.

Suburban and urban libraries also benefit from participation in "library systems" where multiple library outlets share a larger service area and a larger financial base. In such situations, a central decision to put public Internet access in place often results in a number of outlets gaining Internet access. By contrast, rural libraries are more likely to consist of a single library outlet and to have less financial resources.

4. Graphical Public Internet Access

Increasingly Internet access has come to mean graphical Internet access such as that which users experience via the World Wide Web – with the availability of pictures, sound and even video. While

[17] Based on Appendix D, Figure 4: Internet Status for All Public Library Outlets by Poverty (As a Percentage of All Library outlets).
[18] Based on Appendix D, Figure 3: Internet Status for All Public Library Outlets by Metropolitan Status (As a Percentage of All Library Outlets).
[19] *Falling through the Net II: New Data on the Digital Divide*, National Telecommunications and Information Agency, U.S. Department of Commerce, Washington, DC, July 1998, http://www.ntia.doc.gov/ntiahome/net2/falling.html.

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this type of public Internet access has increased substantially over time, graphical public Internet access lags behind overall public Internet access in public library outlets by nearly 5%.

As shown in Figure 6, in 1996 23.7% of public library systems offered graphical Internet access to users. The number of public library systems providing graphical Internet access to users more than doubled by 1997, reaching 52.1%. In 1998 68.6% of all public library outlets had implemented graphical Internet access for the public.[20]

FIGURE 6
GRAPHICAL INTERNET ACCESS IN PUBLIC LIBRARIES

1996	23.7%	Library Systems
1997	52.1%	Library Systems
1998	68.6%	Library Outlets

While the percentage of library outlets connected to the Internet in 1998 stands at 83.6% (Figure 2) and the level of library outlets with public Internet access is 73.3% (Figure 3), the level of library outlets with graphical public access to the World Wide Web is only 68.6% (Figure 6). The 4.7% of library outlets that offer public Internet access without graphical Internet workstations cannot provide public access to the very capabilities that for many have come to define the Internet experience.

5. Bandwidth as a Component of Public Internet Access

Speed of connection (bandwidth) has become an increasingly important component of Internet service as information services have improved to take advantage of the newest technology and software. With each advance in the speed of a user's Internet connection, new services, applications, and resources become possible, and users without high speed connections do not have the capability to make effective use of these new developments. At present, a speed of 56 kbps represents the state of the consumer marketplace in terms of modem technology. Being able to connect at 56 kbps allows users to make effective use of graphic and multimedia content on the World Wide Web.[21]

The 1998 survey inquired about the maximum speed of the Internet connection available for public access in the responding library.[22] As shown in Figure 7,[23] the 68.6% of public library outlets that offer graphical public Internet access are fairly evenly distributed among those that offer speeds less than 56 kbps (22% of all public library outlets), those that offer 56 kbps Internet access (21.9%) and those that offer speeds greater than 56 kbps (23.7%).[24] The remaining 1% of the libraries offering graphical public Internet access either did not respond to the survey question or did not identify a specific speed.

[20] Based on Appendix D, Figure 17: Public Library Outlets that Provide Some Graphical Workstations for Public Internet Access by metropolitan Status and Poverty (As a Percentage of All Public Library Outlets).

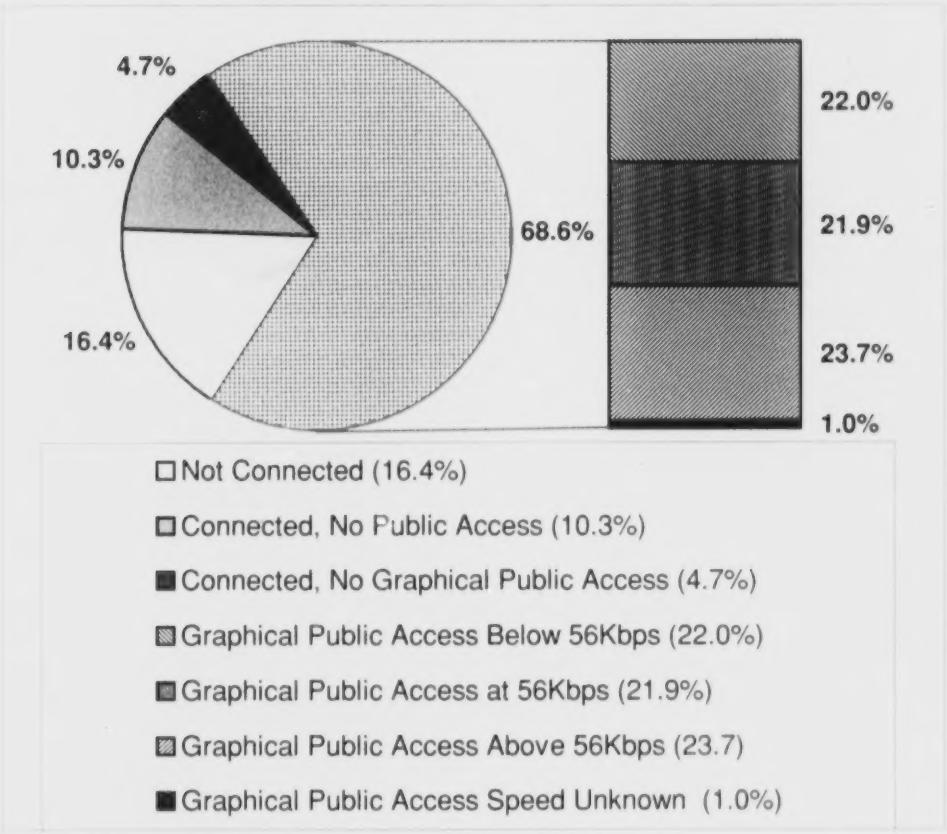
[21] Effective speed may be significantly different for a 56 kbps dial-up connection dedicated to a single workstation than for a 56 kbps leased line shared by multiple workstations. The effective speed of a shared connection varies with the number of workstations in use and is also affected by the age and configuration of those workstations.

[22] Survey Instrument, Question 5, Appendix B.

[23] Percentages of graphical public access are based on Appendix D, Figure 41: Public Library Outlets that Provide Graphical Public Internet Access by Speed of Connection and Metropolitan Status (As A Percentage of All Public Library Outlets). The other percentages are based on Appendix D, Figure 3: Internet Status for All Public Library Outlets by Metropolitan Status (As A Percentage of All Public Library Outlets) and Figure 17, Public Library Outlets that Provide Some Graphical Workstations for Public Internet Access by Metropolitan Status and Poverty (As a Percentage of All Library Outlets).

[24] Based on Appendix D, Figure 41: Public Library Outlets that Provide Graphical Public Internet Access by Speed of Connection and Metropolitan Status (As A Percentage of All Public Library Outlets). Percentages are adjusted to reflect the non-respondents and those who provided "other" answers.

FIGURE 7
MAXIMUM SPEED OF INTERNET ACCESS IN PUBLIC LIBRARIES

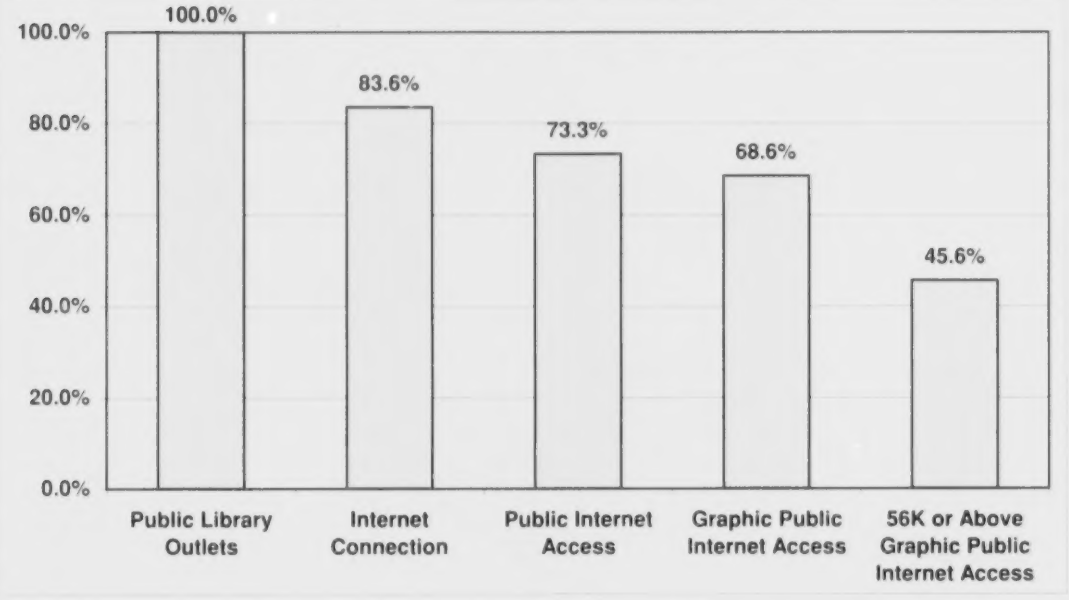


6. Defining Effective Public Internet Access

For individuals establishing personal Internet access in mid-1998, effective Internet access implies a 56 kbps connection to the Internet as well as a computer workstation with sufficient hardware and software capability to support graphic access to the World Wide Web. The Commission believes that *effective public Internet access* in a library in 1998 has similar requirements: an appropriately equipped computer workstation available for public access to the World Wide Web, with bandwidth from the workstation to the Internet of at least 56 kbps. In the library setting there is, however, one additional requirement — an adequate number of workstations for the population served. As shown in Figure 8, between April and June of 1998 only 45.6% of public library outlets had graphical public Internet access at 56 kbps or greater at one or more workstations.[25]

[25] Based on Appendix D, Figure 41: Public Library Outlets that Provide Graphical Public Internet Access by Speed of Connection and Metropolitan Status (As A Percentage of All Public Library Outlets). Percentages are adjusted to reflect the non-respondents and those who provided "other" answers. The survey instrument did not inquire about other characteristics of the library workstations that would affect their performance.

FIGURE 8
PROGRESS TOWARD EFFECTIVE PUBLIC INTERNET ACCESS



Thus, although the 1998 survey shows levels of connectivity and public Internet access at 83.6% (Figure 2) and 73.3% (Figure 3) respectively, and the level of graphical public Internet access at 68.6% (Figure 6), less than half of all public libraries offered graphical public Internet access at speeds of 56 kbps or greater — the minimum configuration currently necessary for *effective public Internet access* in the view of the Commission.

At the time of the survey, any speed less than 56 kbps certainly represented access using a dial-up modem configuration. Some of the 56 kbps access could be dial up connections through modems or modem pools as well. For libraries, use of a dial-up connection may pose additional barriers to *effective public Internet access*. In many locations libraries incur per call or per minute charges for business phone lines. In cases where such charges exist, public Internet access may need to be re-established for each user via a dial-up connection in order to avoid the high cost of a connection which remains in place throughout the day. Such an arrangement may restrict or hinder access in a number of ways -- from library concern about the duration of a user's Internet session due to financial constraints to the need for staff assistance to dial-out with attendant issues of user privacy.

7. Key Measures Connectivity and Public Internet Access, 1996-1998

Figure 9 summarizes some of the key measures of connectivity and public Internet access tracked by the surveys sponsored or co-sponsored by NCLIS in 1996, 1997, and 1998. As noted at the beginning of Section II, comparisons between the 1998 survey and the earlier surveys must be done with great caution due to the differences in universe size and library type under study in each year. [26] The earlier NCLIS studies about the library as a point of presence for public Internet access focused on the level of connectivity in place among library systems, while the 1998 survey focuses on the level of

[26] A bar appears between the 1996 and 1997 data and the 1998 data in the Table in order to emphasize the difference between the survey universes and library types.

connectivity among library outlets. Even allowing for these differences, Figure 9 clearly shows substantial growth in connectivity, public Internet access and graphical public Internet access.

FIGURE 9
U.S. PUBLIC LIBRARIES AND THE INTERNET 1996 TO 1998[27]

Year	Universe[28]	Connected	Public Internet Access	WWW/ Graphic Access	Max Speed 56K or Greater	Maximum Speed Less than 56K
1996	8,929	44.4%	27.8%	23.1%		
1997	8,921	72.3%	60.4%	52.1%		
1998	15,945	83.6%	73.3%	68.6%	45.3%	54.7%

8. Number of Graphical Workstations as a Component of Effective Access

The 1998 survey also provided the basis for additional insights into the numbers of Internet workstations in public libraries. Figure 9 shows that 31.4% of all library outlets do not have any graphical public access to the Internet.[29] At an additional 28.3% of library outlets only a single graphical Internet workstation is available for public access. Stated another way, in only 40.3% of public library outlets do patrons have graphic access to the Internet at more than one workstation. In terms of future research, gaining a better understanding of how the number of public Internet access workstations relates to the population of the library's service area is a high priority since it would contribute to a more accurate measurement of *effective public Internet access*. Nevertheless, the Commission believes that it is safe to assume that a single workstation is inadequate for *effective public Internet access* in many of these library outlets.

FIGURE 10
NUMBER OF GRAPHICAL INTERNET WORKSTATIONS FOR PUBLIC ACCESS IN LIBRARIES

Number of Graphic Workstations	%	Cumulative %
Unspecified	2.4%	100.0%
10 or more	3.4%	97.6%
9	0.9%	94.2%
8	1.5%	93.3%
7	1.7%	91.8%
6	2.6%	90.1%
5	2.5%	87.5%
4	4.9%	85.0%
3	6.2%	80.1%
2	14.2%	73.9%
1	28.3%	59.7%
None	31.4%	31.4%

[27] Bertot, J.C., and McClure, C. R., *The 1997 National Survey of Public Libraries and the Internet: Final Report*, American Library Association, Office for Information Technology Policy, Washington, DC, 1997; and Bertot, J.C., and McClure, C. R., *The 1996 National Survey of Public Libraries and the Internet: Progress and Issues*, U.S. National Commission on Libraries and Information Science, Washington, DC, 1996.

[28] The 1996 and 1997 data (Universe) represent public library systems; the 1998 data (Universe) represent individual public library outlets. The difference between a library system and a library outlet is explained at the beginning of Section II.

[29] Based on Appendix D, Figure 22: Frequency Analysis of Public Library Outlet Graphical Public Access Workstations. For consistency of presentation, Figure 9 presents the frequency analysis as a percentage of all public library outlets.

9. Use of Filtering Software and Availability of an Acceptable Use Policy for Public Internet Access

For some time the Commission has been concerned about the dangers to children from the "dark side of the Internet." There are dangers from predatory pedophiles using chat rooms to contact children. There are violations of privacy, especially in the case of marketing efforts that entice kids to provide a wide variety of consumer information about themselves and their families. There are also dangers from exposure to inappropriate materials, generally sexually explicit matter, including pornography, but also hate language, cult messages, and other troublesome material.

The Commission recognizes that these concerns must be balanced against the freedom of speech guaranteed by the First Amendment and the library community's aversion to censorship. It also acknowledges that individual library policies on Internet use are appropriately local issues, based on the culture, customs and character of each community. Nevertheless, protecting our children is an issue of such importance that the Commission held a hearing in November 1998 on *Kids and the Internet: The Promise and the Perils*. The purpose of the hearing was to focus attention on the enormous benefits of the Internet as well as the significant dangers it poses for children and to seek advice on appropriate means for libraries to protect children without denying them access to the benefits of the Internet.

Many pubic libraries have already addressed the issue of protecting children from inappropriate materials by developing "acceptable use policies" for public Internet access and/or by installing filtering software on some or all of their public access Internet workstations. The Commission believes that the decision about use of filtering software on workstations for public Internet access is a matter for local assessment and decision-making. However, the Commission passed a resolution at its December 3, 1998, meeting in Seattle, Washington, stating:

> *The U.S. National Commission on Libraries and Information Science feels strongly that the governing body of every school and public library, in order to meet its trustee responsibilities, should establish, formally approve, and periodically review a written acceptable use policy statement on Internet access.*

Recognizing the importance of these issues, the 1998 survey contained questions about the use of Internet content filtering software to block pornography[30] and also about the availability of an "acceptable use public access Internet policy."[31] Library outlets report availability of acceptable use policies far more frequently than use of content filtering software. The survey results regarding the number of Internet workstations provide some insight into one possible reason for such a preference. The survey results indicate that 42.7% of the 10,251 library outlets offering graphical public Internet access have only one workstation.[32] As shown in Figure 10, this is the equivalent of 28.3 % of all public library outlets.

Where only a single public Internet access workstation exists, such a workstation must serve all of the library's users, whether children and adults. Content filtering to protect children from pornography may constrain the Internet content that adults access as well. Depending on the software used, filtering might block an adult from gaining important information on healthcare or other matters due to the inclusion in the response of terms that the filtering software deems objectionable for children.

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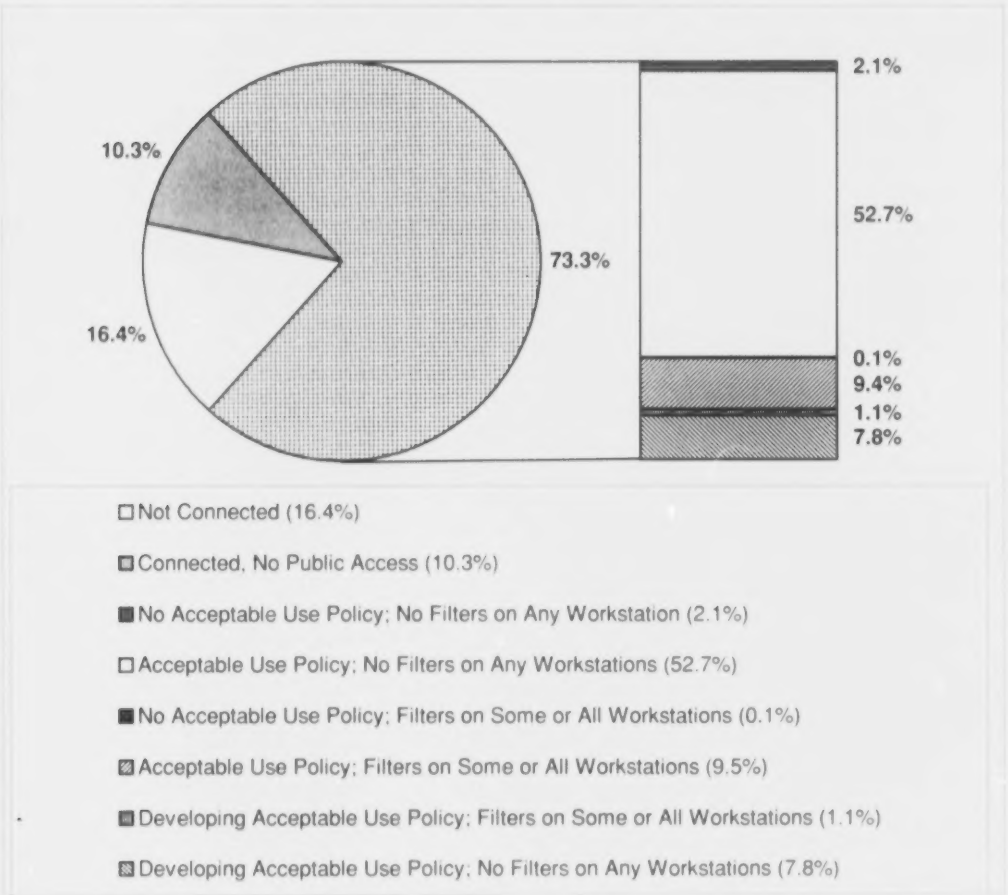
[30] Survey Instrument, Question 6b, Appendix B.
[31] Survey Instrument, Question 7, Appendix B.
[32] Based on Appendix D, Figure 22: Frequency Analysis of Public Library Outlet Graphical Public Access Workstations. For consistency of presentation, Figure 10 presents the frequency analysis as a percentage of all public library outlets.

Figure 11[33] shows that, when the survey data was gathered in May and June 1998, acceptable use policies were already in place in 62.2% of the library outlets, while another 8.9% of these outlets were in the process of developing acceptable use policies. The survey results show only 10.7% of public library outlets using filtering software on some or all of their Internet workstations. Only 2.1% of public libraries did not use filtering software and did not have an acceptable use policy in place or under development.

FIGURE 11
STATUS OF ACCEPTABLE USE POLICIES AND INTERNET FILTERING SOFTWARE IN PUBLIC LIBRARY OUTLETS


10.3%
73.3%
16.4%
2.1%
52.7%
0.1%
9.4%
1.1%
7.8%
Not Connected (16.4%)
Connected, No Public Access (10.3%)
No Acceptable Use Policy; No Filters on Any Workstation (2.1%)
Acceptable Use Policy; No Filters on Any Workstations (52.7%)
No Acceptable Use Policy; Filters on Some or All Workstations (0.1%)
Acceptable Use Policy; Filters on Some or All Workstations (9.5%)
Developing Acceptable Use Policy; Filters on Some or All Workstations (1.1%)
Developing Acceptable Use Policy; No Filters on Any Workstations (7.8%)

[33] Acceptable use policy and filtering software data are based on Appendix D, Figure 56: Overall Distribution of Public Library Outlet Acceptable Use Policy for Public Internet Access and Public Internet Access Terminal/Workstation Filtering Software Use (as a Percentage of Library Outlets Offering Public Internet Access). The other percentages are based on Appendix D, Figure 3: Internet Status for All Public Library Outlets by Metropolitan Status (As A Percentage of All Public Library Outlets). For consistency of presentation, the data from Figure 56 are presented as a percentage of *all* public library outlets.

III. Findings, Policy Issues, and Commission Responses

NCLIS supports work such as this survey based on its statutory authority. The statute states that "The Commission shall have the primary responsibility for developing or recommending overall plans for, and advising the appropriate governments and agencies on, [the library and information services adequate to meet the needs of the people of the United States]" [20 U.S.C. 1504]. In carrying out that responsibility, the Commission shall:

- Advise the President and the Congress on the implementation of national policy by such statements, presentations, and reports as it deems appropriate;
- Conduct studies, surveys, and analyses of the library and informational needs of the nation...and the means by which these needs may be met through information centers [and libraries];
- Develop overall plans for meeting national library and informational needs and for the coordination of activities at the federal, state, and local levels, taking into consideration all of the library and informational resources of the nation to meet those needs; and
- Promote research and development activities that will extend and improve the nation's library and information-handling capability as essential links in the national and international communications and cooperative networks.

1. Supporting Ongoing Surveys on Public Libraries and the Internet

The series of surveys sponsored by the Commission provide valuable baseline information, useful in understanding the state of public library Internet connectivity and service, and the 1998 survey is particularly useful in providing a snapshot of public library Internet service immediately prior to issuance of the first E-Rate funding.

Based on its analyses of the 1998 survey results, the Commission has identified some significant findings as well as a number of policy issues and questions for further research, whether by the Commission and its research partners or by others. Based on the survey and other collateral information, the Commission finds that:

- A substantial number of public libraries have Internet connectivity (83.6%), provide public Internet access (73.3%), and offer graphical public Internet access (68.6%). However, only 45.3% offer graphical public access to the World Wide Web at speeds of 56 kbps or greater.
- Although the poverty level of the population served does not seem to be a significant factor in determining the availability of public Internet access, metropolitan status does: rural libraries lag behind other types of libraries in providing Internet access. Only 67.6% of rural public libraries offer public Internet access which places these libraries 9.1% behind suburban libraries and 16.4% behind urban libraries.
- Nearly one third (31.4%) of the library outlets currently offer no graphical public Internet access. 28.3% of the outlets have only one graphic workstation for public Internet access and 14.3% have only two graphic workstations. More needs to be learned about what constitutes an adequate number of public access Internet workstations in a library. Nevertheless, in many libraries, one graphic workstation for public Internet access is likely to be inadequate to meet public needs.
- The Commission believes that achieving universal Internet connectivity is not enough. Libraries need to implement *effective public Internet access*, offering graphic capability, as well as sufficient speed, workstation functionality, and staff support to meet local needs.

Based on these findings, the Commission will continue its support for the annual National Survey of Public Libraries and the Internet to track the evolving state of public Internet access and the implementation of the goals of Universal Service for public library Internet access.

2. Initiating a Dialog on Effective Public Internet Access

The Commission understands that questions regarding *effective public Internet access* will require ongoing dialog among a number of parties. In the federal sector this includes a number of agencies and departments that have active interests and responsibilities.

Recognizing the variety of perspectives which federal agencies and departments can bring to bear on such questions, the Commission will coordinate within the federal sector to assess what constitutes a minimal level of effective public Internet access. Based on this assessment, the Commission will advise the President and the Congress about the types and levels of support necessary to achieve effective public Internet access on an ongoing basis.

The Commission recognizes that the advent of the E-Rate and the importance of the Internet as a national resource ensure that questions about *effective public Internet access* will continue to be debated at the federal level for the foreseeable future. Nevertheless, the Commission feels strongly that these questions remain primarily issues for local assessment and decision-making. To be successful, current and future national programs for public Internet access, such as the E-Rate, need to be based on guidelines for *effective public Internet access* that allow for the wide variation in local resources and requirements.

The Commission will lead a dialog among state and local governments about how to implement and measure effective public Internet access in light of varying local conditions, such as the degree of existing Internet access among the populations served.

3. Identifying Policy Questions and Promoting Additional Research

The 1998 survey only touched on the degree to which libraries have put in place Internet capabilities to serve the physically disabled[14] and did not provide an adequate basis for drawing conclusions in this area. Additionally, while the survey included the population density near the library building in general terms (urban, suburban or rural), it did not address the size of the population served by each library. It is reasonable to assume that library capacity for public Internet access should be proportional to the population to be served, although other local factors, such as the penetration of personal Internet access among library patrons, also must be considered. The survey did not provide an adequate basis for drawing conclusions in this area. These are both possible areas for inclusion in future research, whether by the Commission and its research partners or by others with an interest in these issues.

Based on the survey and other collateral information, the Commission has identified a number of questions regarding the public library as a provider of public Internet access that deserve further investigation. Future national surveys sponsored in full or in part by the Commission may be able to address some of these questions, but certainly cannot address all of them. Nevertheless, it is valuable to identify these questions in order to focus attention on the work that remains to be done in order to

[14] Survey Instrument, Question 6a, Appendix B.

implement and evaluate *effective public Internet access* through America's public libraries. The questions that can be addressed by surveying the libraries include the following:

- How well located are public libraries with respect to populations requiring the most assistance in obtaining Internet access, such as rural or high poverty areas or other under-served populations; and how well are libraries serving populations which lack or lag behind in Internet access?
- What effect, if any, does measured telephone service (i.e. service that incurs charges for each minute or other unit of use), or the process of establishing and maintaining a dial-up Internet connection, have on the amount and effectiveness of dial-up Internet service?
- What types of acceptable use policies are in effect in libraries and how well do those policies satisfy community concerns for protecting children from inappropriate materials available through the Internet?
- What Internet applications, content, and library staff services do public libraries deliver within the library building and via the Internet to users at home, at work, or elsewhere (e.g., database access, e-mail, and voice and/or video reference services)?
- What role do librarians play in facilitating public Internet access; what amount and type of Internet training do the library staff receive; and what training do public libraries provide to users?
- How much staff time and budget do Internet-related services consume in relationship to other library services, and what contribution does the E-Rate make to the ongoing costs of providing *effective public Internet access* and the related technology, applications and services?

The Commission also identified research questions that require research methods beyond an institutional survey of libraries. Such questions require resources for investigation well beyond the resources available for the Commission surveys. For example, the MCI LibraryLink® Survey referenced in Section I.4 is based on a large scale telephone survey of the general population. Questions that require research methods beyond an institutional survey of libraries include:

- To what degree do libraries continue to serve as a principal or significant public point of Internet presence; and how could the role of libraries be improved or strengthened?
- How successful are libraries in serving those who lack other means of gaining Internet access; and how could libraries be more effective in reaching under-served populations?
- How many persons receive service in library buildings and from beyond library buildings and what population groups do they represent?
- How does library public Internet access compare to other public Internet points of presence?
- What outcomes do users have from their use of the Internet via public libraries (both in buildings and from remote locations); and how do those outcomes compare with their experience with the Internet at home, at work, at school, or at other public Internet points of presence?
- How, and to what extent, do public libraries cooperate with schools and school library media centers, or other public Internet points of presence, in order to provide public Internet access?

The Commission has an interest in such questions, but recognizes both its own limited resources and the fact that many others are engaged in investigation of related topics.

The Commission will continue to develop partnerships and cooperative relationships with federal agencies and with other organizations with similar research interests to investigate questions related to public access to the Internet and the role that libraries play in providing such access. The Commission will work with such organizations to identify relevant issues to be studied and to review the results of such research. By publicizing its own findings, placing those findings in the context of other research, and continuing to identify unanswered questions, the Commission will promote research and development on these topics when it cannot pursue them directly or through partnerships or cooperative relationships.

IV. Bibliography of Other Statistical Studies Funded by the Commission

As noted in Section I, the Commission has tracked the increasing use of the Internet among public libraries since 1994. Some of these studies were supported solely by NCLIS and others were funded jointly with the American Library Association (ALA) Office of Information Technology Policy (OITP). In each case, the contractors for the research were Dr. John Carol Bertot, now with the School of Information Science and Policy at the State University of New York, Albany, and Dr. Charles R. McClure of the School of Information Studies, Syracuse University. Entries are presented in chronological order.

- McClure, Charles R., Bertot, John Carlo, and Zweizig, Douglas L. *Public Libraries and the Internet: Study Results, Policy Issues and Recommendations.* Washington, DC, NCLIS, 1994. 62 pages. http://www.nclis.gov/what/what.html.
- McClure, Charles R., Bertot, John Carlo, and Beachboard, John C. *Internet Costs and Cost Models for Public Libraries: Final Report.* Washington, DC, NCLIS, 1995. 47 pages. http://www.nclis.gov/what/what.html.
- Bertot, John Carlo, McClure, Charles R., and Zweizig, Douglas L. *The 1996 National Survey of Public Libraries and the Internet: Progress and Issues.* Washington, DC, NCLIS, 1996. 67 pages. [Survey sponsored by American Library Association Office for Information Technology Policy (ALA/OITP) and the U.S. National Commission on Libraries and Information Science (NCLIS).] http://www.nclis.gov/what/what.html.
- Bertot, John Carlo, and McClure, Charles R., *Policy Issues & Strategies Affecting Public Libraries in the National Networked Environment: Moving Beyond Connectivity.* Washington, DC, NCLIS, 1997. 26 pages. http://www.nclis.gov/what/what.html.
- American Library Association, Office of Information Technology Policy, *The 1997 National Survey of U.S. Public Libraries and the Internet: Final Report.* Washington, DC, American Library Association, 1997. 100 pages. [Survey conducted by Dr. John Carlo Bertot, Dr. Charles R. McClure, and Dr. Patricia Diamond Fletcher and sponsored by the American Library Association Office for Information Technology Policy (ALA/OITP) and the U.S. National Commission on Libraries and Information Science (NCLIS).] http://www.ala.org/oitp/research/survey97.html.
- American Library Association, Office of Information Technology Policy, *The 1997 National Survey of U.S. Public Libraries and the Internet: Summary Results.* Washington, DC, American Library Association, 1997. 8 pages. [A report on a survey conducted by Dr. John Carlo Bertot, Dr. Charles R. McClure, and Dr. Patricia Diamond Fletcher and sponsored by the American Library Association Office for Information Technology Policy (ALA/OITP) and the U.S. National Commission on Libraries and Information Science (NCLIS).] http://www.ala.org/oitp/research/survey97.html.

- Bertot, John Carlo, and McClure, Charles R., *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, DC: NCLIS, 1998. 85 pages. [Survey sponsored by the American Library Association Office for Information Technology Policy (ALA/OITP) and the U.S. National Commission on Libraries and Information Science (NCLIS).] http://www.nclis.gov/what/survey98.pdf and included in this document as Appendices B through E.
- Bertot, John Carlo and McClure, Charles R., *The 1998 National Survey of Public Library Outlet Internet Connectivity, Summary Results.* Washington, DC, American Library Association, 1998. 4 pages. [Survey sponsored by the American Library Association Office for Information Technology Policy (ALA/OITP) and the U.S. National Commission on Libraries and Information Science (NCLIS).] http://www.ala.org/oitp/research/survey98.html and included in this document as Appendix A.

APPENDIX A: THE 1998 NATIONAL SURVEY OF U.S. PUBLIC LIBRARY OUTLET INTERNET CONNECTIVITY; SUMMARY RESULTS, OCTOBER 1998[35]

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The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity

Summary Results
October 1998

American Library Association
Office for Information Technology Policy

Dr. John Carlo Bertot
University of Albany, State University of New York

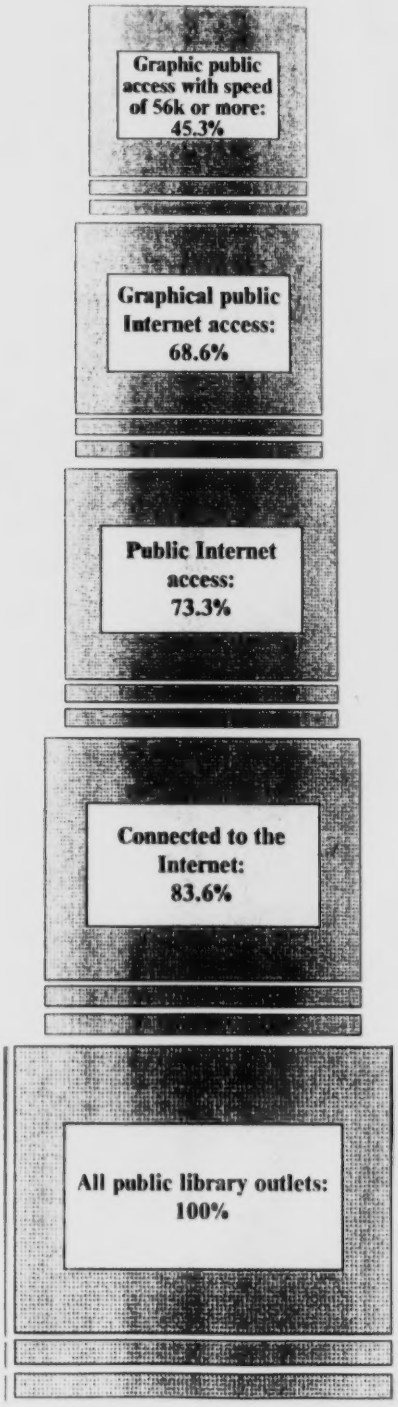
Dr. Charles R. McClure
Syracuse University

The survey was sponsored by the American Library Association s Office for Information Technology Policy in cooperation with the U.S. National Commission on Libraries and Information Science. Unless otherwise noted, information contained in this summary reflects results from the 1998 National Survey of Public Libraries Outlet Internet Connectivity.

* * * *

Less than 1 in 2 public library outlets are able to offer multimedia Internet access to the public at speeds of 56 kbps or greater. Approximately 8 in 10 public library outlets are connected to the Internet. About 7 in 10 offer public Internet access, with almost the same numbers offering multimedia access to the Internet.

At the time of this survey, the National Center for Education Statistics reported that in 1994 there were 8,921 library systems representing 15,945 library outlets that is central and branch libraries. A sample of 2,500 of the nation's 15,718 public library outlets was selected for this survey. The survey achieved a response rate of 75.5%.


Graphic public access with speed of 56k or more: 45.3%
Graphical public Internet access: 68.6%
Public Internet access: 73.3%
Connected to the Internet: 83.6%
All public library outlets: 100%

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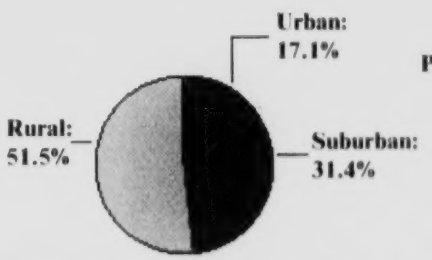
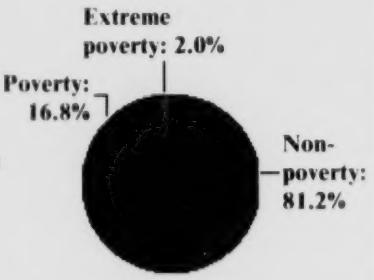
Public Library Outlets in Rural and Poverty Areas

n=15,718

More than half of all public library outlets are located in rural areas. Almost 1 in 5 public library outlets serve a poverty area. About 1 in 10 public library outlets serve rural poverty areas.



Distribution by Metropolitan Status

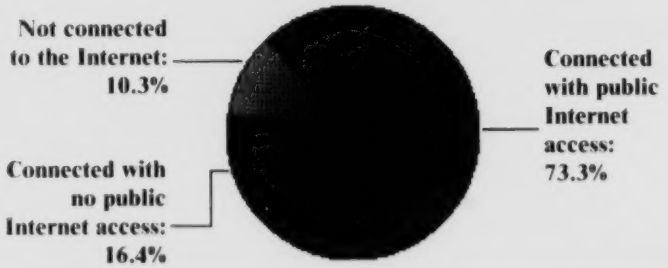


Distribution by Poverty Areas

Public Library Outlet Connectivity

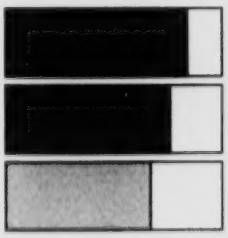
n=15,718

Seven out of 10 public library outlets offer public Internet access and nearly 2 in 10 are connected to the Internet, but are not offering any public Internet access.


Not connected to the Internet: 10.3%
Connected with no public Internet access: 16.4%
Connected with public Internet access: 73.3%

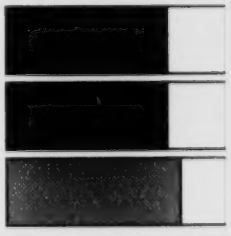
Public Library Outlets Help Bridge the Digital Divide

Urban: n=2,691
Suburban: n=4,933
Rural: n=8,094



Connectivity by Metropolitan Status

Non-poverty: n=12,757
Poverty: n=2,644
Extreme Poverty: n=317



Connectivity by Poverty Area

In urban and suburban areas, about 4 out of 5 public library outlets offer public Internet access; in rural areas, a little more than 3 in 5 offer public Internet access.

Public access to the Internet from libraries is about equal in poverty and non-poverty areas. However, a smaller proportion of rural libraries offer public Internet access than their urban and suburban counterparts.

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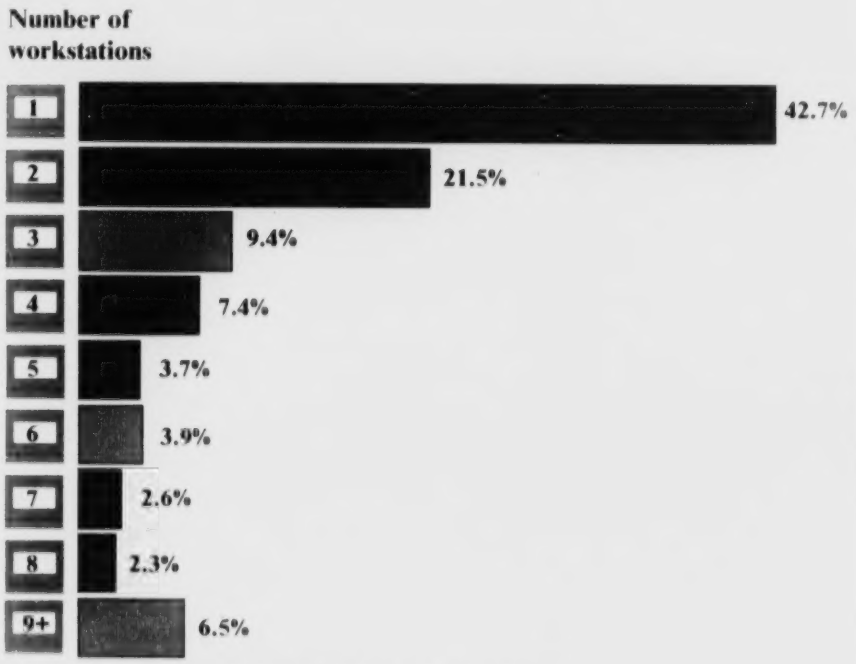
Adequacy of Access in Public Library Outlets: Workstations

n=10,623

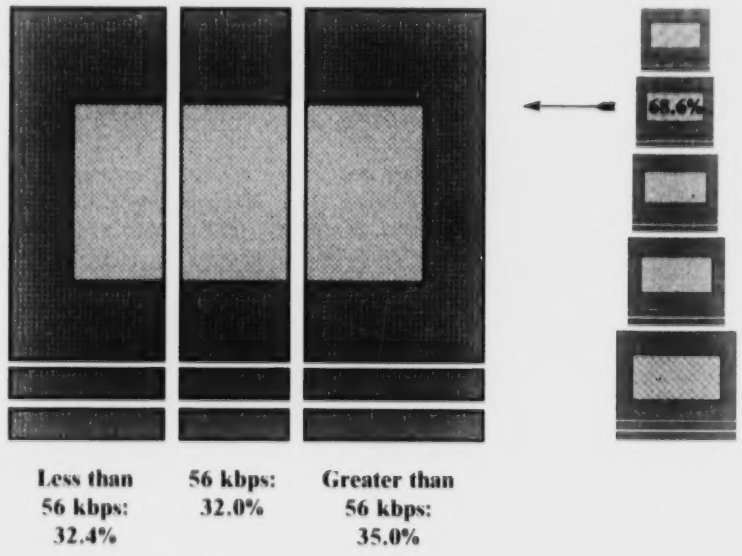
Nearly half of all public library outlets with public Internet access have only 1 multimedia workstation available to the public.



Adequacy of Access in Public Library Outlets: Speed of Connections

n=10,079

Only about 1 in 3 public library outlets with multimedia public Internet access are connecting at speeds greater than 56 kbps.



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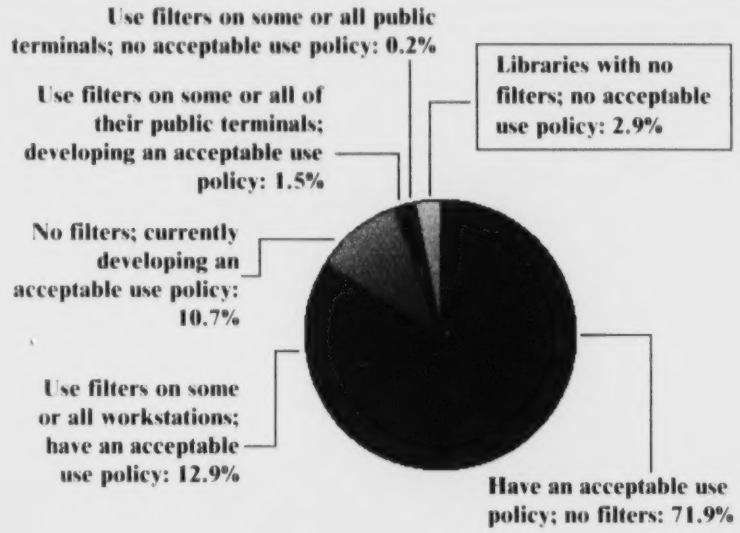
Internet Use Policies in Public Library Outlets

n=11,519

Nearly every public library outlet has or is developing an Internet acceptable use policy for patrons using their facilities. More than 8 in 10 public library outlets have an acceptable use policy and another 1 in 10 are developing such policies. About 1 in 7 public library outlets use filters on some or all of their public workstations.


Use filters on some or all public terminals; no acceptable use policy: 0.2%
Libraries with no filters; no acceptable use policy: 2.9%
Use filters on some or all of their public terminals; developing an acceptable use policy: 1.5%
No filters; currently developing an acceptable use policy: 10.7%
Use filters on some or all workstations; have an acceptable use policy: 12.9%
Have an acceptable use policy; no filters: 71.9%

The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity was conducted from May through June 1998 by Dr. John Carlo Bertot, associate professor at the School of Information Science and Policy, University of Albany, State University of New York and Dr. Charles McClure, distinguished professor at the School of Information Studies, Syracuse University. It was sponsored by the American Library Association's Office for Information Technology Policy and the National Commission on Libraries and Information Science. The 1998 study builds and expands upon areas of public library Internet-related data as reported in the ALA/NCLIS report of 1997 and the NCLIS-sponsored 1994 and 1996 studies.

The number of public library outlets comes from the National Center for Education Statistics. While 1995 statistics are now available, in 1994, the latest year for which statistics were available at the time of the study, there were 8,921 library systems representing 15,945 library outlets that is central and branch libraries. A sample of 2,500 of the nation's 15,718 public library outlets was selected for this survey.[1] The sample was weighted to represent public libraries across various poverty and non-poverty areas and central city, suburban, and rural locations based on U.S. Census definitions of poverty areas[2] and metropolitan status. The survey achieved a response rate of 75.5%.

Limited copies of "The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Summary Results" are available at no charge from the address below or online at http://www.ala.org/oitp/research/survey98.html. A more detailed final report should be available by early 1999.

Inquiries concerning the information presented here should be directed to the Office for Information Technology Policy, American Library Association, 1301 Pennsylvania Ave., N.W., Suite 403, Washington, D.C. 20004-1701; phone: 202/628-8421; fax: 202/628-8424; e-mail: oitp@alawash.org or the National Commission on Libraries and Information Science, 1110 Vermont Ave., N.W. Suite 820, Washington, D.C. 20005-3522; phone: 202/606-9200; fax: 202/606-9203.

Funding for the American Library Association Office for Information Technology Policy was made possible through a grant from the W.K. Kellogg Foundation, the John D. and Catherine T. MacArthur Foundation and with the support of ALA members.

[1] The remaining 227 libraries did not have metropolitan status codes in the NCES public library universe file and so could not be included in the universe for this study. Of the remaining 15,718 over half, 51.5%, of these outlets are in rural areas, 17.1% in urban areas, and 31.4% in suburban areas. About 81.2% of outlets are in non-poverty areas, 16.8% in poverty areas, and 2% in extreme poverty areas.

[2] The U.S. Census defines a poverty census tract as one in which 20% or more of residents have incomes at or below the poverty level. Extreme poverty areas are those tracts in which 40% or more of residents have incomes at or below the poverty level.

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APPENDIX B: SURVEY INSTRUMENT

National Survey of Public Library Outlet Internet Connectivity

Instructions: The American Library Association and the National Commission on Libraries and Information Science are surveying a national sample of public library outlets regarding their connectivity to the Internet. Please respond to the questions that follow for the outlet listed on the backside of this survey form. Thank you for your participation! **PLEASE RETURN THE QUESTIONNAIRE BY MAY 29, 1998.**

1. Is this library outlet **currently connected** to the Internet in any way? (FILL IN ONE ● ONLY)

   ○ No (please go to question 2)
   ○ Yes (please go to question 3)

2. If this library outlet **does not now have any access to the Internet**, is there a plan to connect the outlet to the Internet in any way in the next 12 months? (FILL IN ONE ● ONLY)

   ○ YES, for library staff use only
   ○ YES, for library staff use AND public access
   ○ NO Internet connection planned

3. Does this library outlet provide **public access to the Internet**? (FILL IN ONE ● ONLY)

   ○ No (please return the survey. **THANK YOU!**)
   ○ Yes (please go to question 4)

4. Please indicate the **type(s) and number** of public access Internet terminals/workstations provided by this library outlet: (FILL IN ALL ● THAT APPLY)

   a. ○ Text-based (e.g., non-graphical). Please enter the number of terminals: _____
   b. ○ Graphical (e.g., can display images). Please enter the number of workstations: _____

5. Please indicate the **maximum speed** of this **library outlet's public access Internet service connection**: (FILL IN ONE ● ONLY)

   ○ 14.4 kbps or less
   ○ 28.8 kbps
   ○ 33.6 kbps
   ○ 56 kbps
   ○ 64 kbps ISDN 1B+D)
   ○ 128 kbps (ISDN 2B+D)
   ○ T1 (1.5 mbps)
   ○ Cable service (10 mbps)

6. Please complete the following questions about this library outlet's public access Internet services: (FILL IN ALL ● THAT APPLY)

		On all terminals/ workstations	On some terminals/ workstations	On no terminals/ workstations
a)	Our library offers special hardware/ software for individuals with disabilities	○	○	○
b)	Our library uses filtering software (e.g., blocking software for pornography)	○	○	○

7. Does this library outlet have an **acceptable use public access Internet policy** in place (e.g., a policy that informs the public about the use of the Internet by minors, pornographic material, chat rooms)? (FILL IN ONE ● ONLY)

   ○ Yes ○ No ○ Currently developing a policy

Thank you for your participation! Please return the survey in the enclosed stamped envelope.
(Survey contact information is on the other side).

For questions concerning the survey, please contact:

John Bertot <bertot@umbc.edu>
Assistant Professor
Department of Information Systems
1000 Hilltop Circle
University of Maryland Baltimore County
Baltimore, MD 21250
(410) 455-3883 phone
(410) 455-1073 fax

NOTE: The above contact information was accurate at the time of the survey, but it is no longer current. The contact information at the time of publication is:

John Carlo Bertot, Ph.D. < jcbertot@cnsunix.albany.edu>
Associate Professor, School of Information Science & Policy
State University of New York (SUNY) at Albany
135 Western Avenue
Albany, NY 12222
(518) 442-5125 phone
(518) 442-5367 fax
http://www.albany.edu/~jcbertot/

APPENDIX C: SURVEY METHODOLOGY[36]

[36] From *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*, by John Carlo Bertot and Charles R McClure, Washington, D.C.: U.S. National Commission on Libraries and Information Science, 1998.

Introduction

The 1998 public library outlet study (hereafter referred to as the 1998 Study) used two distinct methodologies: one for the survey component and one for the geocoding of all public library outlets based on the library outlet metropolitan status code and the poverty rate of the population an outlet serves. The authors were responsible for the survey methodology, with the geocoding component of the study coming from a variation of a study conducted by the American Library Association's Office for Information Technology Policy (available at http://www.ala.org/oitp/). This section describes both study methods.

1998 Study Survey Methodology

Funding for the 1998 Study was finalized in March 1998. Upon funding, the authors drafted an initial survey form for distribution to public library outlets. The authors pre-tested the initial survey form with public librarians, state library agencies, library association professionals, and state library data coordinators (those individuals responsible for the collection and submission of state-based public library statistics). In all, the authors received comments and input into the survey from 70 individuals. Based on these suggestions, the authors modified the survey form and made it available electronically (both via the Web and as an e-mail attachment) for review by the state data coordinators. Once again, comments and suggestions were incorporated into a final version of the survey by April 1998.

While the pre-test of the survey was in progress, the authors contracted with Dr. Dean Jue of Florida State University to:

- Recalculate the poverty radii for all public library outlets based on a 1 mile radius for urban library outlets, a 3 mile radius for suburban library outlets, and a 10 mile radius for rural library outlets. This recalculation was pre-tested with and recommended by the state data coordinators as well as library researchers.
- Draw a proportionate-to-size sample of 2,561 public library outlets based on outlet metropolitan status and poverty classifications. The sample surveyed all outlets in poverty/metropolitan status cells with fewer than 350 outlets (see Figure 1).
- Generate a label file for survey mailing.

This portion of the 1998 study was completed in mid-April 1998.

Upon the recommendation of the state data coordinators and public librarian survey pre-testers, the authors mailed survey forms during the first week in May to the library director of a public library outlet's central entity/administrative unit. For most library outlets, this meant that the central entity/administrative unit was the surveyed outlet (as only approximately 16% of public library systems have branches, according to NCES (1997)). For other library outlets, however, a central entity/administrative unit may have received multiple survey forms -- one for each sample outlet in that library's system. Survey data collection activities ended during the last week of June 1998 (see Appendix A for a copy of the final mail survey).

The survey form was also available for completion on the Web. Using Cold Fusion software for the electronic survey form design and Microsoft Access database software for the survey database, users were able to complete the responses for their library outlets electronically. Over 200 survey forms (approximately 11.1%) were submitted electronically.

Prior to the distribution of the mail survey forms, each state data coordinator received a copy of the final survey form and a list of the public library outlets surveyed in their respective states. The state data coordinators were critical contact points for the authors for the success of the survey. The authors kept in constant contact with the state data coordinators via a listserv and fax. This enabled the authors to keep the state data coordinators informed as to the progress of the survey in general and the survey in their states in particular.

Due to public library outlet closures and consolidations (between the 1993 public library data -- the most currently available for the geocoding component of the study -- and 1998), the original sample of 2,561 was adjusted to 2,500. Based on a sample of 2,500, 1,888 completed survey forms were received for a response rate of 75.5%.

Weighting of Survey Responses

To generate national estimates of public library outlet Internet connectivity, each responding outlet survey received a weight based on the outlet's metropolitan status/poverty classification. The weights ranged from 1.22 for urban library outlets in poverty areas of greater than 40% to 11.31 for suburban library outlets in poverty areas of less than 20%. Thus, for example, each suburban library outlet in a poverty area of less than 20%'s survey response would be multiplied by the 11.31 weight and counted as 11.31 outlets out of the total outlets for any given survey question.

By summing all the assigned weights, it is possible to project Internet connectivity for all 15,718 geocoded library outlets.[37] The weights are also used to project Internet connectivity within each poverty/metropolitan status cell. To provide national estimates and standard deviation figures, the authors used SPSS Standard Edition software, version 8.0.1.

The weighting necessitates the rounding of outlets and percentages throughout the figures presented in this report. **Thus, it is possible that not all cell n's and percentages will add correctly**.

Data Analysis and Data Verification Issues

Upon completion of the data collection phase of the 1998 survey, the authors, as well as NCLIS and ALA-OITP staff, reviewed the database and initial data analysis for inconsistencies. This review resulted in the need for corrections to the data set. The corrections took the form of both assumptions by the authors as well as follow-up questioning with survey respondents via phone and e-mail.

The corrections/assumptions took the following form:

- **Assumption/correction 1: Public Access**. If a library outlet responded that it has a connection and completed all the public access questions but left the public access question blank, a "yes" was entered for public access (survey question 3).

[37] According to NCES (1996), there are 16,792 public library outlets, of which 894 were bookmobiles. By subtracting the bookmobiles, and other issues encountered by Dr. Dean Jue (see the following section of this appendix for additional detail on the geocoding process), the study team was not able to identify and geocode all outlets. In the end, the study team was able to geocode 15,718 outlets.

- **Assumption/correction 2: Software/Hardware for Disabilities**. If a library outlet answered all the survey questions, but entered nothing for the software/hardware question (survey question 6a), this was changed to a "on no terminals." The assumption here is that, in most surveys, questions are skipped/left blank if it does not pertain to the respondent.
- **Assumption/correction 3. Filtering Software**. If a library outlet answered all the survey questions, but entered nothing for the filtering software question (survey question 6b), this was changed to a "on no terminals." The assumption here is that, in most surveys, questions are skipped/left blank if it does not pertain to the respondent.

For other questions such as graphical workstation and text-based terminal public access, the authors had to contact participating library outlets/administrative units to correct/clarify responses. Generally, the follow-up questions were necessary for two reasons:

(1) The submitted surveys indicated a number of text-based terminals or graphical workstations, but had no indication that the library outlet provided either type of access. The authors wanted to ensure that the libraries indeed provided either text-based or graphical public Internet access.
(2) The submitted surveys indicated that the library outlet provided text-based terminals or graphical workstations, but had no indication of the number of such terminals/workstations.

The authors wanted to ensure the correct response for the outlet surveys in question so as to provide accurate data.

In all, the authors had to conduct survey follow-ups with approximately 30 public library outlets (which had a significant impact on the final analysis of the data due to the weighted nature of the sample).

Outlet Geocoding by Metropolitan Status and Poverty

This analysis was performed using two data sets obtained from other sources. One is a digital census tract map of the entire U.S. and the other is the Federal-State Cooperative System's (FSCS) database of public library outlets for 1993 (NCES, 1996). This document describes the procedure used to prepare the data sets used for this analysis.

A. Census Tracts

The census tract data set was purchased from Claritas, Inc. of Ithaca, New York. The data set consisted of a complete digital set of census tract maps of all 50 U.S. states and the District of Columbia (D.C.) in ESRI's Arc/Info format. These 51 files contained no census data other than a concatenated FIPS 15-character code comprised of the state, county, and census tract identification code.

The associated poverty data, also prepared by Claritas, were in 51 separate files. Each file had a FIPS 15-character code that could be linked to the digital census tract maps. These poverty data included all fields from the P117 table in the STF-3A files (i.e., the poverty status by age group data).

The Arc/Info command 'JOINITEM' was used to join each of the 51 poverty data files to its corresponding digital census tract files using the 15-character FIPS code as the link. The Arc/Info command 'MAPJOIN' was then used to merge the 48 contiguous states and D.C. into two coverages. The states west of the Mississippi River (22 states) were merged into a coverage named WESTUS and the states east of the Mississippi (26 states) plus Washington, D.C. were merged into a coverage named EASTUS. Hawaii and Alaska remained as separate and independent coverages.

Because the poverty analysis relied on an accurate calculation of the size of each census tract over a fairly large area (e.g., the eastern U.S.), the four coverages were projected from their original latitude/longitude coordinate system into the Albers Equal-Area Conic projection. The standard parallels and central meridian used for each of the four projected coverages are:

	ALASKA	HAWAII	EASTUS	WESTUS
1st St. Parallel	55 00 00	8 00 00	29 30 00	29 30 00
2nd St. Parallel	65 30 00	18 30 00	45 30 00	45 30 00
Central Meridian	-150 00 00	-157 00 00	-82 00 00	-106 00 00

After the four coverages were projected into the Albers projection, several procedures were applied to all four of the coverages:

(1) The Arc/Info command 'ADDITEM' was used to add the variables NABPOV (the number of individuals above the poverty level, NBEPOV (the number of individuals below the poverty level), and ITAREA (the initial geographic area of the entire census tract) into the census tract coverages.
(2) The Info command 'CALCULATE' was used to calculate the values of NABPOV, NBEPOV, and ITAREA for all the census tracts in each of the four coverages. NABPOV was set equal to the sum of the first twelve values of the P117 table while NBEPOV was set equal to the sum of the last twelve values of the P117 table. Since no geographic modifications had been made to the census tract coverage yet, ITAREA was just equal to AREA, an area value maintained by Arc/Info for each polygon (i.e., the individual census tract in this case).
(3) The Arc/Info command 'DROPITEM' was used to drop attribute values from the census tract coverages that were no longer needed (e.g., the individual poverty by age group values of the P117 table).

The four census tract coverages were now ready to be used for the poverty analysis.

B. Public Library Outlets

The public library outlets digital file was provided to us by Dr. Keith Curry Lance and corresponds to the Federal-State Cooperative System's (FSCS) 1993 list of public library outlets. The list of 1993 library outlets was the most current as of late 1996. The list contains 16,792 public library outlets.

The list of outlets was sent to Qualitative Marketing Software (QMS) of Clearwater, Florida for geocoding. Using, in order of preference, either the street address, zip+4, or zip, QMS calculated a latitude and longitude value for the library outlets. There were 20 library outlets for which QMS was not able to derive a latitude/longitude value for which more individualized attention was needed. The returned file was in Dbase (.dbf) format.

The FSCS list of public library outlets included 894 bookmobile service outlets. It was agreed upon between FREAC and the ALA Washington office that poverty statistics for such outlets were meaningless because of the mobile nature of these services. Thus, bookmobiles were excluded from this poverty analysis. The maximum number of geocoded outlets that could be used in this poverty analysis then is 15,898 (16,792 – 894 bookmobiles). Subtracting the 20 library outlets that required more detailed attention reduced the initial group of geocoded library outlets to 15,878.

A perusal of the 15,878 geocoded library outlets showed an unanticipated problem that needed resolving. Some library systems used the same mailing address for all their library outlets. Under such circumstances, it is impossible to determine the poverty rate around these library outlets because their mailing addresses (which was used to geocode the outlet's location and resulting service area) would be identical to that of the central outlet.

The duplicates wizard was used in Microsoft's Access 97 to find library outlets that were geocoded to the identical latitude and longitude (and thus have the same mailing address). This procedure identified 405 libraries representing 188 locations that had duplicate addresses. Some of these duplicate sites were joint public library and school library locations. Others were branch outlets whose mail were being sent to a central library location. In very rural areas, different towns had the same zip codes.

The decision was made to incorporate these duplicate libraries into the poverty analysis by selecting just one of the duplicate sites based on the following criteria:

1) Use the 'CE' library outlet whenever possible
2) Use public library outlets over school outlets
3) Use the 'CE' library outlet over regional libraries
4) If all the outlets having the same address are 'CE' outlets, arbitrarily pick one.

For rural locations in which different towns had the same zip code, the *U.S. Gazetteer* at the U.S. Census Bureau's web page provided latitude and longitude values for the center of some of these towns. The URL for the *U.S. Gazetteer* is http://www.census.gov/cgi-bin/gazetteer. If these latitude and longitudes were different for the towns in question, then these values were used for distinguishing and geocoding the formerly duplicate library outlets. The assumption is that the library outlet is very close to the center of town in these locations. The elimination of library outlets with duplicate addresses from the initial group of 15,878 outlets reduced the total number of outlets for the poverty analysis down to 15,707.

The *U.S. Gazetteer* was also used on the 20 library outlets that QMS was not able to geocode. A review of the information associated with these 20 outlets showed that all of them had invalid zip codes (e.g., a zip code value beginning with '3' but with the town supposedly in California). The decision was made to attempt to geocode these 20 outlets using just the town and state information since the zip code information was obviously wrong. Using the *U.S. Gazetteer*, eleven of these 20 library outlets were geocoded. Thus, the final library group used for the poverty analysis included 15,718 libraries out of a total universe of 15,898 total (98.868% inclusion).

The .dbf file provided by QMS was modified to reflect the corrections described above for the applicable library outlets. An ASCII comma delimited file was then generated from the .dbf file that included the longitude and latitude for each of the 15,718 library outlets generated from the QMS geocoding process. This ASCII file could then be entered into Arc/Info using the 'GENERATE' command for point data. The library coverage was named ALLLIB. The command 'PROJECTDEFINE' was used to define the locational values in ALLLIB as being in decimal degrees.

The library attributes associated with each library provided with the FSCS data file were read into a Microsoft Excel 97 file. After organizing this attribute file, the file was exported into a formatted ASCII text file, with blanks separating each of the fields in the records. This allowed the text file to be read into an Info file using the 'GET' command into a file named ALLLIBS.ATT. This Info file

of library attribute data was then linked to the ALLLIB geographic coverage using the Arc/Info command 'JOINITEM.'

Arc/Info's ARCEDIT program was then used on the ALLLIB coverage to select out library outlets relative to their location. This resulted in four separate library coverages that corresponded to those of the census tract coverages. Each of these four library coverages was also projected into the Albers projection to correspond to that of the census tract coverages. Each of the four library coverages was then further divided into (potentially) four coverages depending on the outlets' metropolitan status. A breakdown of the public library outlets' distribution by area of the country and type is:

Status	Alaska	Hawaii	East U.S.	West U.S.	TOTAL
CC	4	7	1,628	928	**2567**
NC	0	0	3,142	1,613	**4,755**
NO	89	14	4,388	3,484	**7,965**
Unknown	0	27	390	14	**431**
TOTAL	**93**	**48**	**9,548**	**6,029**	**15,718**

Thus, there were a total of 13 library coverages, one for each of the cells in the above table that does not have a value of zero and that is not a total.

At this point, the U.S. Bureau of the Census's CD-ROM (SSTF17) entitled "Poverty in the U.S." which is based on poverty statistics collected from the 1990 census was used. This CD-ROM also had two pieces of information associated with each census tract: whether it was part of a CMSA/PMSA and whether it was part of a central city. Based on this information, the following assignments could be made to all census tracts:

(1) If a census tract was "central city", a library outlet in that tract should be 'CC';
(2) If a census tract was part of a CMSA or PMSA but not part of a central city, then a library outlet in that tract should be 'NC'; and
(3) If a census tract was not part of a CMSA or PMSA, then a library outlet in that tract should be 'NO'.

This information was extracted from the CD-ROM and then read into an Info file. This Info file was then merged (using Arc/Info's 'JOINITEM) with the respective census tract coverages for the three regions in which there were 'UK' libraries (Hawaii, eastern U.S., and western U.S.). By overlaying this information with the original library point files for these regions, it was possible to assign a metropolitan status code to all the libraries with 'UK' status in the original FSCS files. The results of this analysis were:

124 'CC' library outlets
178 'NC' library outlets
129 'NO' library outlets
431 old 'UK' library outlets

These libraries were placed into their appropriate library coverage files, giving the table below:

Status	Alaska	Hawaii	East U.S.	West U.S.	TOTAL
CC	4	14	1,732	941	**2,691**
NC	0	9	3,310	1,614	**4,933**
NO	89	25	4,506	3,474	**8,094**
TOTAL	**93**	**48**	**9,548**	**6,029**	**15,718**

The Arc/Info 'REGIONBUFFER' command was then used on each of the coverages to generate a buffer around each library point. Central city (CC) library outlets had a buffer of one mile (1610 meters). NC library outlets had a buffer of both two miles (3220 meters) and three miles (4830 meters). Rural (NO) libraries had buffers of both five miles (8050 meters) and ten miles (16,100 meters). REGIONBUFFER was used instead of the 'BUFFER' command because REGIONBUFFER allows for overlapping polygons (i.e., the market area of one library outlet in close proximity to another may overlap that of the other).

Each of these buffered library files was then overlaid on top of its appropriate census tract area coverage using the Arc/Info 'INTERSECT' command. This resulted in the creation of new polygons as the census tract polygons would be cut into smaller polygons by the market area(s) of library outlets created by the REGIONBUFFER command. Note that the census statistics on poverty would NOT be modified by this action. For instance, if only one-tenth of the original census tract actually fell into a market area buffer, the entire census tract population statistics would still be assigned to this new small census tract polygon created by the INTERSECT command. To account for this splitting of census tracts, the variables PBEPOV and PABPOV were added to each of the 10 library coverages (See below for how they were used.).

In order to analyze the poverty statistics in the census tract polygons created by the INTERSECT command, it was necessary to use the Arc/Info 'REGIONQUERY' command due to the existence of overlapping market areas, especially for two-mile diameter market areas in central city areas. This command analyzed each market area region for each library outlet relative to its census tract region.

After this procedure was completed, the Info program was used within Arc/Info for each of the 10 library market area coverages for the following calculations:

CALC PBEPOV = (AREA / ITAREA) * NBEPOV
CALC PABPOV = (AREA / ITAREA) * NABPOV

These two calculations divide the actual area of a census tract within a library outlet market area (AREA, which is automatically calculated by Arc/Info) by the initial size of the entire census tract region (ITAREA). This value is then multiplied by the number of individuals within the entire census tract region that are below poverty (NBEPOV) or above poverty (NABPOV) and puts the result into the newly-defined variables (PBEPOV and PABPOV). This procedure re-calculates the number of individuals that are above or below poverty assigned to the library market area from each of the census tracts relative to the percentage of the total census tract that actually falls within the library outlet's market area.

A library outlet's market area and associated poverty statistics could now be calculated from the many small polygons. The Arc/Info's FREQUENCY command was used to sum the total number of individuals within each census tract polygon that was below or above poverty level status for each library outlet after the above calculations. The Arc/Info command 'INFODBASE' was then used to convert the results from these calculations into a Dbase file format that could be read by Microsoft Excel.

The Excel program was used to calculate the poverty percentage rate for each library outlet's market area. This was calculated by dividing the number of individuals below poverty status for each market region by the total number of individuals within each region for whom poverty status was determined. Excel was also used to find the absolute number as well as the relative percentage of library outlets within each poverty percentage point.

C. Random Sampling

Once the radius of the market area was determined, then the exact Arc/Info coverages to be used was identified because each coverage contained one particular radius (market area) for one particular library type (i.e., either urban, suburban, or rural). The radii of one, three, and ten were selected for urban, suburban, and rural libraries, respectively, by Dr. John Bertot (as discussed in the Survey Methodology section above). The breakdown of library types by poverty was as following using those radii:

Status	< 20.5% Poverty	20.51–40.5% Poverty	>40.5% Poverty	TOTAL
Urban	1587 (58.97%)	885 (32.89%)	219 (8.14%)	**2,691**
Suburban	4602 (93.29%)	313 (6.35%)	18 (0.36%)	**4,933**
Rural	6568 (81.15%)	1446 (17.87%)	80 (0.99%)	**8,094**
TOTAL	**12,757**	**48**	**9,548**	**15,718**

At this point, Dr. Bertot decided that all the libraries that fell within four particular cells would be included in the study. These were all libraries surrounded by extreme poverty, regardless of their location, as well as those suburban libraries serving populations in poverty. The rest would have a proportional sample drawn to approximate 2000 libraries. Using this technique, the following number of libraries were actually to be included in the sample:

Status	< 20.5% Poverty	20.51–40.5% Poverty	>40.5% Poverty	TOTAL
Urban	202	113	219	**343**
Suburban	586	313	18	**628**
Rural	836	184	80	**1030**
TOTAL	**1624**	**610**	**317**	**2551**

To draw the sample itself for those cells that needed sampling, the random number generator function within Microsoft Excel was used. The random number assigned to each library branch within each coverage was calculated as follows:

=INT(RAND()*10000)

Once this random number was assigned to each branch in each coverage, the Excel spreadsheet was sorted by the column containing the randomly-generated number. The top 'X' libraries within that coverage was then used for the sample. For instance, for the coverage containing the 1,587 libraries in urban areas whose market area had poverty less than 20.5%, the 202 libraries that were randomly assigned the highest numbers were selected to be included in the sample. The associated address information for all those selected libraries were then sent to Dr. Bertot.

References

National Center for Education Statistics. (1997). *Public libraries in the United States: FY 1994.* Washington, D.C.: U.S. Department of Education Office of Educational Research and Improvement [NCES 97-418].

National Center for Education Statistics. (1996). *Public libraries in the United States: FY 1993.* Washington, D.C.: U.S. Department of Education Office of Educational Research and Improvement.

APPENDIX D: SURVEY RESULTS[38]

[38] From *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*, by John Carlo Bertot and Charles R McClure, Washington, D.C.: U.S. National Commission on Libraries and Information Science, 1998.

Survey Universe: Figure 1

Figure 1. Public Library Outlets by Metropolitan Status and Poverty.

	Poverty			
	Less than 20%	**20%-40%**	**More than 40%**	**Overall**
Metropolitan Status				
Urban	10.1% (n=1,587)	5.6% (n=885)	1.4% (n=219)	17.1% (n=2,691)
Suburban	29.3% (n=4,602)	2.0% (n=313)	0.1% (n=18)	31.4% (n=4,933)
Rural	41.8% (n=6,568)	9.2% (n=1,446)	0.5% (n=80)	51.5% (n=8,094)
Overall	81.2% (n=12,757)	16.8% (n=2,644)	2.0% (n=317)	**100.0%*** (n=15,718)

* According to NCES (1996), there are 16,792 public library outlets, of which 894 are bookmobiles. By subtracting the 894 bookmobiles, and other issues encountered by the study team, it was possible to geocode 15,718 outlets. See Appendix B of the final report for details on the outlet geocoding process.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Public Library Outlet Internet Connectivity and Public Access: Figures 2 through 13

Figure 2. Public Library Outlets Connected to the Internet (Both Public Access and No Public Access) by Metropolitan Status and Poverty (As a Percentage of All Library Outlets).

Base=15,718	Poverty			
	Less than 20%	**20%-40%**	**More than 40%**	**Overall**
Metropolitan Status				
Urban	91.1% (n=1,445)	91.9% (n=813)	87.2% (n=191)	91.0% +/- 2.9% (n=2,449)
Suburban	88.7% (n=4,082)	79.2% (n=248)	83.3% (n=15)	88.1% +/- 3.2% (n=4,345)
Rural	79.3% (n=5,207)	74.5% (n=1,077)	72.5% (n=58)	78.4% +/- 4.1% (n=6,343)
Overall	84.1% +/- 3.6% (n=10,735)	80.9% +/- 3.9% (n=2,138)	83.3% +/- 3.7% (n=264)	**83.6%** +/- 3.7% (n=13,137)

Note 1: The cell n's represent weighted estimates of all connected public library outlets.
Note 2: Readers should refer to Figure 1 for the total number of public library outlets within each poverty/metropolitan status cell.
Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Public Library Outlet Internet Connectivity and Public Access: Figures 2 through 13

Figure 3. Internet Status for All Public Library Outlets by Metropolitan Status (As a Percentage of All Library Outlets).

	Internet Status			
Base = 15,718	Connected with Public Internet Access	Connected with No Public Internet Access	Not Connected to the Internet	Total
Metropolitan Status				
Urban	84.0% +/- 3.7% (n=2,261)	7.0% +/- 2.6% (n=188)	9.0% +/- 2.9% (n=242)	100.0% (n=2,691)
Suburban	76.7% +/- 4.2% (n=3,783)	11.4% +/- 3.2% (n=562)	11.9% +/- 3.2% (n=588)	100.0% (n=4,933)
Rural	67.6% +/- 4.7% (n=5,475)	10.7% +/- 3.1% (n=868)	21.6% +/- 4.1% (n=1,751)	100.0% (n=8,094)
Overall	73.3% +/- 4.7% (n=11,519)	10.3% +/- 3.0% (n=1,618)	16.4% +/- 3.7% (n=2,581)	100.0% (n=15,718)

Note 1: The cell n's represent weighted estimates of public library outlets connected to the Internet, not connected to the Internet, or connected to the Internet with public access services.

Note 2: Readers should refer to Figure 1 for the total number of public library outlets within each poverty/metropolitan status cell and Figure 2 for the total number of connected public library outlets within each poverty/metropolitan status cell.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Public Library Outlet Internet Connectivity and Public Access: Figures 2 through 13

Figure 4. Internet Status for All Public Library Outlets by Poverty (As a Percentage of All Library Outlets).

	Internet Status			
Base = 15,718	Connected with Public Internet Access	Connected with No Public Internet Access	Not Connected to the Internet	Total
Poverty				
Less than 20%	73.2% +/- 4.4% (n=9,431)	10.9% +/- 3.1% (n=1,394)	15.9% +/- 3.7% (n=2,022)	100.0% (n=12,757)
20%-40%	72.8% +/- 4.5% (n=1,925)	8.1% +/- 2.7% (n=213)	19.1% +/- 3.9% (n=506)	100.0% (n=2,644)
More than 40%	79.5% +/- 4.0% (n=252)	3.8% +/- 1.9% (n=12)	16.7% +/- 3.7% (n=53)	100.0% (n=317)
Overall	73.3% +/- 4.7% (n=11,519)	10.3% +/- 3.0% (n=1,618)	16.4% +/- 3.7% (n=2,581)	100.0% (n=15,718)

Note 1: The cell n's represent weighted estimates of public library outlets connected to the Internet, not connected to the Internet, or connected to the Internet with public access services.

Note 2: Readers should refer to Figure 1 for the total number of public library outlets within each poverty/metropolitan status cell and Figure 2 for the total number of connected public library outlets within each poverty/metropolitan status cell.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Public Library Outlet Internet Connectivity and Public Access: Figures 2 through 13

Figure 5. Public Library Outlets With No Internet Access that Plan to Connect to the Internet for Library Staff Use Only by June 1999 by Metropolitan Status and Poverty (As a Percentage of Library Outlets without Internet Access).

Base = 2,581 Non-response=53	Poverty			
	Less than 20%	**20%-40%**	**More than 40%**	**Overall**
Metropolitan Status				
Urban	7.1% (n=10)	25.0% (n=18)	N/A	11.6% +/- 3.2% (n=28)
Suburban	6.5% (n=34)	7.8% (n=5)	N/A	6.6% +/- 2.5% (n=39)
Rural	13.8% (n=182)	2.8% (n=10)	22.7% (n=5)	11.6% +/- 3.1% (n=197)
Overall	11.4% +/- 3.1% (n=226)	6.9% +/- 2.5% (n=34)	9.4% +/- 2.9% (n=5)	**10.4%** +/- 3.0% (n=265)

Note 1: The cell n's represent weighted estimates of non-connected public library outlets that plan to connect to the Internet for library staff use.

Note 2: Readers should refer to Figures 1 and 2 for the total number of public library outlets within each poverty/metropolitan status cell and the total number of connected public library outlets within each poverty/metropolitan status cell, respectively.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 53 of the 2,581 unconnected library outlets did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Public Library Outlet Internet Connectivity and Public Access: Figures 2 through 13

Figure 6. Public Library Outlets With No Internet Access that Plan to Connect to the Internet for Library Staff Use and Public Access by June 1999 by Metropolitan Status and Poverty (As a Percentage of Library Outlets without Internet Access).

Base = 2,581 Non-response=53	Poverty			
	Less than 20%	20%-40%	More than 40%	Overall
Metropolitan Status				
Urban	71.6% (n=101)	50.0% (n=36)	53.6% (n=15)	62.8% +/- 4.8% (n=152)
Suburban	67.4% (n=351)	56.3% (n=36)	50.0% (n=2)	66.1% +/- 4.7% (n=388)
Rural	35.0% (n=461)	54.3% (n=195)	38.1% (n=8)	39.1% +/- 4.8% (n=664)
Overall	46.1% +/- 4.9% (n=912)	53.8% +/- 4.9% (n=267)	46.2% +/- 4.0% (n=24)	**47.6%** +/- 4.9% (n=1,204)

Note 1: The cell n's represent weighted estimates of non-connected public library outlets that plan to connect to the Internet for library staff use and public access.

Note 2: Readers should refer to Figures 1 and 2 for the totai number of public library outlets within each poverty/metropolitan status cell and the total number of connected public library outlets within each poverty/metropolitan status cell, respectively.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 53 of the 2,581 unconnected library outlets did not respond to this question.

Note 5: The survey did not ask responding libraries that are currently connected to the Internet but do not provide public access to indicate their plans to convert to public access Internet services by June 1999.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Public Library Outlet Internet Connectivity and Public Access: Figures 2 through 13

Figure 7. Public Library Outlets With No Internet Access that Do Not Plan to Connect to the Internet by June 1999 by Metropolitan Status and Poverty (As a Percentage of Library Outlets without Internet Access).

Base = 2,581 Non-response=53	Poverty			
	Less than 20%	**20%-40%**	**More than 40%**	**Overall**
Metropolitan Status				
Urban	21.3% (n=30)	25.0% (n=18)	46.4% (n=13)	25.6% +/- 4.3% (n=62)
Suburban	26.2% (n=136)	35.4% (n=23)	50.0% (n=2)	27.2% +/- 4.4% (n=160)
Rural	51.2% (n=675)	42.9% (n=154)	38.1% (n=8)	49.3% +/- 4.9% (n=837)
Overall	42.5% +/- 4.9% (n=841)	39.3% +/- 4.8% (n=195)	44.2% +/- 5.0% (n=23)	**41.9%** +/- 4.9% (n=1,059)

Note 1: The cell n's represent weighted estimates of non-connected public library outlets that do not plan to connect to the Internet.

Note 2: Readers should refer to Figures 1 and 2 for the total number of public library outlets within each poverty/metropolitan status cell and the total number of connected public library outlets within each poverty/metropolitan status cell, respectively.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 53 of the 2,581 unconnected library outlets did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Public Library Outlet Internet Connectivity and Public Access: Figures 2 through 13

Figure 8. Public Library Outlets that Provide Public Internet Access by Metropolitan Status and Poverty (As a Percentage of Library Outlets Connected to the Internet).

Base = 13,137	Poverty			
	Less than 20%	20%-40%	More than 40%	Overall
Metropolitan Status				
Urban	93.7% (n=1,354)	88.9% (n=722)	96.3% (n=184)	92.3% +/- 2.7% (n=2,261)
Suburban	87.3% (n=3,562)	83.9% (n=208)	87.5% (n=14)	87.1% +/- 3.4% (n=3,783)
Rural	85.0% (n=4,425)	92.4% (n=984)	94.8% (n=55)	86.3% +/- 3.4% (n=5,475)
Overall	87.0% +/- 3.4% (n=9,341)	90.0% +/- 3.0% (n=1,925)	95.5% +/- 2.1% (n=252)	**87.7%** +/- 3.3% (n=11,519)

Note 1: The cell n's represent weighted estimates of all connected public library outlets that provide public access to the Internet.

Note 2: Readers should refer to Figure 2 for the total number of public library outlets within each poverty/metropolitan status cell that have an Internet connection.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Public Library Outlet Internet Connectivity and Public Access: Figures 2 through 13

Figure 9. Public Library Outlets that Provide Public Internet Access by Metropolitan Status and Poverty (As a Percentage of All Library Outlets).

Base = 15,718	Poverty			
	Less than 20%	20%-40%	More than 40%	Overall
Metropolitan Status				
Urban	85.4% (n=1,354)	81.6% (n=722)	84.0% (n=184)	84.0% +/- 3.2% (n=2,261)
Suburban	77.4% (n=3,562)	66.5% (n=208)	73.7% (n=14)	76.7% +/- 4.2% (n=3,783)
Rural	67.4% (n=4,425)	68.8% (n=995)	68.8% (n=55)	67.6% +/- 4.7% (n=5,475)
Overall	73.2% +/- 4.4% (n=9,341)	72.8% +/- 4.5% (n=1,925)	79.5% +/- 4.0% (n=252)	**73.3%** +/- 4.3% (n=11,519)

Note 1: The cell n's represent weighted estimates of all public library outlets that provide public access to the Internet.

Note 2: Readers should refer to Figures 1 for the total number of public library outlets within each poverty/metropolitan status cell.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Public Library Outlet Internet Connectivity and Public Access: Figures 2 through 13

Figure 10. Projected Internet Status for Public Library Outlets by Metropolitan Status As of June 1999 (As a Percentage of All Library Outlets).

	Internet Status			
Base = 15,718 Non-response=53	**Connected With Public Internet Access**	**Connected With No Public Internet Access**	**Not Connected to the Internet**	**Total**
Metropolitan Status				
Urban	89.7% +/- 3.0% (n=2,413)	8.0% +/- 2.7% (n=216)	2.3% +/- 1.5% (n=62)	100.0% (n=2,691)
Suburban	84.6% +/- 3.6% (n=4,171)	12.2% +/- 3.3% (n=601)	3.2% +/- 1.8% (n=160)	100.0% (n=4,932)
Rural	76.3% +/- 4.2% (n=6,139)	13.2% +/- 3.4% (n=1,065)	10.4% +/- 3.1% (n=837)	100.0% (n=8,041)
Overall	81.2% +/- 3.9% (n=12,723)	12.0% +/- 3.3% (n=1,883)	6.8% +/- 2.5% (n=1,059)	100.0% (n=15,664)

Note 1: The cell n's represent weighted estimates of connected public library outlets that provide special software/hardware for persons with disabilities on all, some, or none of their public access Internet workstations/terminals.

Note 2: Readers should refer to Figure 1 for the total number of public library outlets within each poverty/metropolitan status cell, Figure 2 for the total number of connected public library outlets within each poverty/metropolitan status cell, and Figure 3 for the total number of public library outlets that provide public access to the Internet by metropolitan status.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 53 of the library outlets did not respond to this question.

Note 5: The survey did not ask responding libraries that are currently connected to the Internet but do not provide public access to indicate their plans to convert to public access Internet services by June 1999.

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Public Library Outlet Internet Connectivity and Public Access: Figures 2 through 13

Figure 11. Projected Internet Status for Public Library Outlets by Poverty As of June 1999 (As a Percentage of All Library Outlets).

	Internet Status			
Base = 15,718 Non-response=53	**Connected With Public Internet Access**	**Connected With No Public Internet Access**	**Not Connected to the Internet**	**Total**
Poverty				
Less than 20%	80.6% +/- 4.0% (n=10,253)	12.7% +/- 3.3% (n=1,620)	6.6% +/- 2.5% (n=841)	100.0% (n=12,714)
20%-40%	83.2% +/- 3.7% (n=2,192)	9.4% +/- 2.9% (n=247)	7.4% +/- 2.6% (n=195)	100.0% (n=2,634)
More than 40%	87.3% +/- 3.3% (n=276)	5.4% +/- 2.3% (n=17)	7.3% +/- 2.6% (n=23)	100.0% (n=316)
Overall	81.2% +/- 3.9% (n=12,723)	12.0% +/- 3.3% (n=1,883)	6.8% +/- 2.5% (n=1,059)	100.0% (n=15,664)

Note 1: The cell n's represent weighted estimates of connected public library outlets that provide special software/hardware for persons with disabilities on all, some, or none of their public access Internet workstations/terminals.

Note 2: Readers should refer to Figure 1 for the total number of public library outlets within each poverty/metropolitan status cell, Figure 2 for the total number of connected public library outlets within each poverty/metropolitan status cell, and Figure 4 for the total number of public library outlets that provide public access to the Internet by poverty.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 53 of the library outlets did not respond to this question.

Note 5: The survey did not ask responding libraries that are currently connected to the Internet but do not provide public access to indicate their plans to convert to public access Internet services by June 1999.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Public Library Outlet Internet Connectivity and Public Access: Figures 2 through 13

Figure 12. Projected Internet Status for Public Library Outlets by Metropolitan Status As of June 1999 (As a Percentage of Library Outlets without Internet Access).

	Internet Status			
Base = 2,581 Non-response=53	**Connected With Public Internet Access**	**Connected With No Public Internet Access**	**Not Connected to the Internet**	**Total**
Metropolitan Status				
Urban	62.8% +/- 4.8% (n=152)	11.6% +/- 3.2% (n=28)	25.6% +/- 4.4% (n=62)	100.0% (n=242)
Suburban	66.1% +/- 4.7% (n=388)	6.6% +/- 2.5% (n=39)	27.2% +/- 4.4% (n=160)	100.0% (n=587)
Rural	39.1% +/- 4.9% (n=664)	11.6% +/- 3.2% (n=197)	49.3% +/- 5.0% (n=837)	100.0% (n=1,698)
Overall	47.6% +/- 5.0% (n=1,204)	10.4% +/- 3.1% (n=265)	41.9% +/- 4.9% (n=1,059)	100.0% (n=2,528)

Note 1: The cell n's represent weighted estimates of connected public library outlets that provide special software/hardware for persons with disabilities on all, some, or none of their public access Internet workstations/terminals.

Note 2: Readers should refer to Figures 3 and 4 for the number of currently non-connected public library outlets within each poverty/metropolitan status cell.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 53 of the 2,581 unconnected library outlets did not respond to this question.

Note 5: The survey did not ask responding libraries that are currently connected to the Internet but do not provide public access to indicate their plans to convert to public access Internet services by June 1999.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Public Library Outlet Internet Connectivity and Public Access: Figures 2 through 13

Figure 13. Projected Internet Status for Public Library Outlets by Poverty As of June 1999 (As a Percentage of Library Outlets without Internet Access).

	Public Library Outlet Special Software/ Hardware Status			
Base = 2,581 Non-response=53	**Connected With Public Internet Access**	**Connected With No Public Internet Access**	**Not Connected to the Internet**	**Total**
Poverty				
Less than 20%	46.1% +/- 5.0% (n=912)	11.4% +/- 3.2% (n=226)	42.5% +/- 4.9% (n=841)	100.0% (n=1,979)
20%-40%	53.8% +/- 5.0% (n=267)	6.9% +/- 2.5% (n=34)	39.3% +/- 4.9% (n=195)	100.0% (n=496)
More than 40%	46.2% +/- 5.0% (n=24)	9.4% +/- 3.0% (n=5)	44.2% +/- 5.0% (n=23)	100.0% (n=52)
Overall	47.6% +/- 5.0% (n=1,204)	10.4% +/- 3.1% (n=265)	41.9% +/- 4.9% (n=1,059)	100.0% (n=2,528)

Note 1: The cell n's represent weighted estimates of connected public library outlets that provide special software/hardware for persons with disabilities on all, some, or none of their public access Internet workstations/terminals.

Note 2: Readers should refer to Figures 3 and 4 for the number of currently non-connected public library outlets within each poverty/metropolitan status cell.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 53 of the 2,581 unconnected library outlets did not respond to this question.

Note 5: The survey did not ask responding libraries that are currently connected to the Internet but do not provide public access to indicate their plans to convert to public access Internet services by June 1999.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Public Library Outlet Type Of Public Access Services: Figures 14 through 22

Figure 14. Public Library Outlets that Provide Some Text-Based Terminals for Public Internet Access by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519 Non-reponse=241	Poverty			
	Less than 20%	**20%-40%**	**More than 40%**	**Overall**
Metropolitan Status				
Urban	30.4% (n=384)	28.0% (n=190)	42.9% (n=72)	30.6% +/- 4.6% (n=646)
Suburban	22.0% (n=780)	24.9% (n=51)	35.7% (n=5)	22.2% +/- 4.2% (n=836)
Rural	12.5% (n=546)	15.6% (n=154)	12.7% (n=7)	13.1% +/- 3.34 (n=707)
Overall	18.6% +/- 3.9% (n=1,711)	21.2% +/- 4.1% (n=395)	35.2% +/- 4.7% (n=83)	**19.4%** +/- 3.9% (n=2,188)

Note 1: The cell n's represent weighted estimates of connected public library outlets that provide text-based public access to the Internet.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 241 of the 11,519 library outlets that provide public access Internet services did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Public Library Outlet Type Of Public Access Services: Figures 14 through 22

Figure 15. Public Library Outlets that Provide Some Text-Based Terminals for Public Internet Access by Metropolitan Status and Poverty (As a Percentage of All Library Outlets).

Base=15,718 Non-response=241	Poverty			
	Less than 20%	20%-40%	More than 40%	Overall
Metropolitan Status				
Urban	25.7% (n=384)	22.6% (n=190)	35.5% (n=72)	25.4% +/- 4.4% (n=646)
Suburban	17.0% (n=780)	16.5% (n=51)	26.3% (n=5)	17.0% +/- 3.8% (n=836)
Rural	8.4% (n=546)	10.7% (n=154)	8.8% (n=7)	8.8% +/- 2.8% (n=707)
Overall	13.6% +/- 3.4% (n=1,711)	15.3% +/- 3.6% (n=395)	27.6% +/- 4.5% (n=83)	**14.1%** +/- 3.4% (n=2,188)

Note 1: The cell n's represent weighted estimates of all public library outlets that provide text-based public access to the Internet.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 241 library outlets did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Public Library Outlet Type Of Public Access Services: Figures 14 through 22

Figure 16. Public Library Outlets that Provide Some Graphical Workstations for Public Internet Access by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519 Non-response=241	Poverty			
	Less than 20%	**20%-40%**	**More than 40%**	**Overall**
Metropolitan Status				
Urban	84.8% (n=1,071)	92.0% (n=623)	78.0% (n=131)	86.6% +/- 3.4% (n=1,826)
Suburban	94.9% (n=3,353)	90.7% (n=186)	100.0% (n=14)	94.7% +/- 2.2% (n=3,558)
Rural	96.6% (n=4,222)	97.9% (n=964)	96.4% (n=53)	96.8% +/- 1.8% (n=5,239)
Overall	94.3% +/- 2.3% (n=8,651)	95.0% +/- 2.2% (n=1,773)	83.9% +/- 3.7% (n=198)	**94.2%** +/- 2.3% (n=10,623)

Note 1: The cell n's represent weighted estimates of connected public library outlets that provide graphical public access to the Internet.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 241 of the 11,519 library outlets that provide public access Internet services did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Public Library Outlet Type Of Public Access Services: Figures 14 through 22

Figure 17. Public Library Outlets that Provide Some Graphical Workstations for Public Internet Access by Metropolitan Status and Poverty (As a Percentage of All Library Outlets).

Base=15,718 Non-response=241	Poverty			
	Less than 20%	20%-40%	More than 40%	Overall
Metropolitan Status				
Urban	71.6% (n=1,071)	74.2% (n=623)	64.5% (n=131)	71.9% +/- 4.5% (n=1,826)
Suburban	73.3% (n=3,358)	60.0% (n=186)	73.7% (n=14)	72.5% +/- 4.5% (n=3,558)
Rural	64.8% (n=4,222)	67.1% (n=964)	66.3% (n=53)	65.2% +/- 4.8% (n=5,239)
Overall	68.7% +/- 4.6% (n=8,651)	68.6% +/- 4.6% (n=1,773)	65.8% +/- 4.8% (n=198)	**68.6%** +/- 4.7% (n=10,623)

Note 1: The cell n's represent weighted estimates of all public library outlets that provide graphical public access to the Internet.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 241 library outlets did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Public Library Outlet Type Of Public Access Services: Figures 14 through 22

Figure 18. Public Library Outlets that Provide Both Graphical Workstations and Text-Based Terminals for Public Internet Access by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519 Non-response=241	Poverty			
	Less than 20%	20%-40%	More than 40%	Overall
Metropolitan Status				
Urban	15.2% (n=192)	19.9% (n=135)	20.8% (n=35)	17.2% +/- 3.8% (n=363)
Suburban	16.9% (n=599)	15.6% (n=32)	35.7% (n=5)	16.9% +/- 3.7% (n=636)
Rural	9.1% (n=396)	13.5% (n=133)	9.1% (n=5)	9.9% +/- 2.9% (n=535)
Overall	12.9% +/- 3.4% (n=1,188)	16.1% +/- 3.7% (n=301)	19.0% +/-3.9% (n=45)	**13.6%** +/- 3.4% (n=1,534)

Note 1: The cell n's represent weighted estimates of connected public library outlets that provide graphical and text-based public access to the Internet.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 241 of the 11,519 library outlets that provide public access Internet services did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Public Library Outlet Type Of Public Access Services: Figures 14 through 22

Figure 19. Public Library Outlets that Provide Only Text-Based Terminals for Public Internet Access by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519 Non-response=241	Poverty			
	Less than 20%	**20%-40%**	**More than 40%**	**Overall**
Metropolitan Status				
Urban	15.2% (n=192)	8.0% (n=54)	22.0% (n=37)	13.4% +/- 3.4% (n=283)
Suburban	5.1% (n=181)	9.3% (n=19)	N/A	5.3% +/- 2.2% (n=200)
Rural	3.4% (n=150)	2.1% (n=21)	3.6% (n=2)	3.2% +/- 1.8% (n=172)
Overall	5.7% +/- 2.3% (n=523)	5.0% +/- 2.2% (n=94)	16.1% +/- 3.7% (n=39)	**5.8%** +/- 2.3% (n=655)

Note 1: The cell n's represent weighted estimates of connected public library outlets that provide only text-based public access to the Internet.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 241 of the 11,519 library outlets that provide public access Internet services did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Public Library Outlet Type Of Public Access Services: Figures 14 through 22

Figure 20. Public Library Outlets that Provide Only Graphical Workstations for Public Internet Access by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519 Non-response=241	Poverty			
	Less than 20%	20%-40%	More than 40%	Overall
Metropolitan Status				
Urban	69.6% (n=879)	72.0% (n=488)	57.1% (n=96)	69.4% +/- 4.6% (n=1,463)
Suburban	78.0% (n=2,759)	75.1% (n=154)	64.3% (n=9)	77.8% +/- 4.2% (n=2,922)
Rural	87.5% (n=3,825)	84.4% (n=831)	87.3% (n=48)	86.9% +/- 3.4% (n=4,704)
Overall	81.4% +/- 3.9% (n=7,464)	78.8% +/- 4.1% (n=1,472)	64.8% +/- 4.8% (n=153)	**80.6%** +/- 4.0% (n=9,089)

Note 1: The cell n's represent weighted estimates of connected public library outlets that provide only text-based public access to the Internet.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 241 of the 11,519 library outlets that provide public access Internet services did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Public Library Outlet Type Of Public Access Services: Figures 14 through 22

Figure 21. Frequency Analysis of Public Library Outlet Text-Based Public Access Terminals.

Base=2,116
Non-response=72

Quartile	Number of Text-Based Terminals Per Outlet	Percentage of Outlets for Each Quantity of Text-Based Terminals	Cumulative Percentage of Outlets for Each Quantity of Text-Based Terminals
1 (25%)	1	37.1%	37.1%
2 (50%)	2	17.4%	54.5%
	3	10.0%	64.5%
	4	4.1%	68.7%
	5	4.5%	73.1%
3 (75%)	6	6.1%	79.2%
	7	5.3%	84.5%
	8	5.7%	90.2%
	9	3.1%	93.3%
	10	0.5%	93.7%
	12	0.9%	94.7%
	13	0.5%	95.2%
	14	0.5%	95.7%
	15	0.1%	95.8%
	16	0.6%	96.3%
	18	0.5%	96.8%
	19	0.5%	97.3%
	21	0.1%	97.4%
	22	0.1%	97.5%
	25	0.2%	97.6%
	35	0.4%	98.0%
	39	0.1%	98.1%
	42	0.5%	98.6%
	45	0.5%	99.1%
	156	0.5%	99.6%
	183	0.4%	100.0%

Note 1: Readers should refer to Figure 14 for the number of public library outlets that provide text-based public access to the Internet by metropolitan status and poverty.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Public Library Outlet Type Of Public Access Services: Figures 14 through 22

Figure 22. Frequency Analysis of Public Library Outlet Graphical Public Access Workstations.

Base=10,251
Non-response=372

Quartile	Number of Graphical Workstations per Outlet	Percentage of Outlets for Each Quantity of Graphical Workstations	Cumulative Percentage of Outlets for Each Quantity of Graphical Workstations
1 (25%)	1	42.7%	42.7%
2 (50%)	2	21.5%	64.2%
	3	9.4%	73.6%
3 (75%)	4	7.4%	81.0%
	5	3.7%	84.7%
	6	3.9%	88.6%
	7	2.6%	91.2%
	8	2.3%	93.5%
	9	1.4%	94.9%
	11	0.7%	95.6%
	12	0.4%	96.0%
	13	0.2%	96.2%
	14	0.3%	96.5%
	15	0.5%	97.0%
	16	0.3%	97.3%
	17	0.2%	97.5%
	19	0.2%	97.7%
	23	0.2%	97.9%
	24	0.2%	98.2%
	25	0.1%	98.3%
	26	0.2%	98.5%
	28	0.2%	98.7%
	34	0.1%	98.8%
	35	0.1%	98.9%
	37	0.1%	99.0%
	41	0.1%	99.1%
	42	0.1%	99.2%
	44	0.3%	98.6%
	56	0.1%	99.7%
	82	0.1%	99.8%
	135	0.1%	99.9%
	215	0.1%	100.0%
	289*	0.0%	100.0%
	318*	0.0%	100.0%

* Due to rounding, frequencies that are less than 0.05% appear as 0.0%.

Note 1: Readers should refer to Figure 16 for the number of public library outlets that provide graphical public access to the Internet by metropolitan status and poverty.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Maximum Speed Of Public Access: Figures 23 through 42

Figure 23. Public Library Outlet Maximum Speed of Public Internet Access by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

	Metropolitan Status			Poverty Level			
Base=11,519 Non-response=556	Urban	Suburban	Rural	Less than 20%	20%-40%	More than 40%	Overall
Maximum Speed							
14.4kbps	3.6% (n=76)	3.7% (n=133)	4.7% (n=248)	4.8% (n=431)	0.9% (n=16)	3.8% (n=9)	4.2% +/- 1.9% (n=456)
28.8kbps	4.9% (n=103)	13.4% (n=486)	21.8% (n=1,143)	16.9% (n=1,509)	11.3% (n=204)	7.7% (n=18)	15.8% +/- 3.6% (n=1,731)
33.6kbps	2.8% (n=59)	7.9% (n=288)	20.4% (n=1,071)	13.7% (n=1,224)	10.3% (n=186)	3.0% (n=7)	12.9% +/- 3.3% (n=1,417)
56kbps	33.5% (n=700)	35.1% (n=1,273)	30.7% (n=1,608)	32.0% (n=2,853)	34.8% (n=628)	42.6% (n=100)	32.7% +/- 4.6% (n=3,581)
64kbps	4.8% (n=100)	4.3% (n=156)	4.3% (n=223)	4.1% (n=368)	6.0% (n=108)	1.7% (n=4)	4.4% +/-2.0% (n=479)
128kbps	10.7% (n=223)	6.0% (n=218)	2.8% (n=148)	4.8% (n=432)	8.1% (n=146)	4.7% (n=11)	5.4% +/- 2.2% (n=589)
T1 (1.45mbps)	36.5% (n=764)	26.0% (n=946)	13.3% (n=695)	20.4% (n=1,823)	27.6% (n=498)	34.0% (n=80)	21.9% +/- 4.0% (n=2,401)
Cable (10mbps)	1.5% (n=32)	2.8% (n=103)	1.8% (n=96)	2.4% (n=218)	0.7% (n=12)	0.4% (n=1)	2.1% +/- 1.4% (n=231)
Other	1.7% (n=35)	0.6% (n=21)	0.2% (n=11)	0.6% (n=52)	0.5% (n=9)	2.1% (n=5)	0.6% +/- .07% (n=67)
Overall	100.0% (n=2,092)	100.0% (n=3,624)	100.0% (n=5,243)	100.0% (n=8,910)	100.0% (n=1,811)	100.0% (n=235)	100% (n=10,961)

Note 1: The cell n's represent weighted estimates of the maximum speed of connected public library outlet public access Internet services.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 556 of the 11,519 library outlets that provide public access Internet services did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Maximum Speed Of Public Access: Figures 23 through 42

Figure 24. Public Library Outlet Maximum Speed of 14.4kbps for Public Internet Access by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519 Non-response=556	Poverty			
	Less than 20%	20%-40%	More than 40%	Overall
Metropolitan Status				
Urban	4.8% (n=61)	1.4% (n=9)	3.6% (n=6)	3.6% +/- 1.8% (n=76)
Suburban	3.6% (n=124)	3.4% (n=7)	15.4% (n=2)	3.7% +/- 1.8% (n=133)
Rural	5.8% (n=246)	N/A	3.6% (n=2)	4.7% +/- 2.0% (n=248)
Overall	4.8% +/- 2.1% (n=431)	0.9% +/- .09% (n=16)	3.6% +/- 1.9% (n=9)	**4.2%** +/- 1.9% (n=456)

Note 1: The cell n's represent weighted estimates of the 14.4kbps maximum speed of connected public library outlet public access Internet services.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 556 of the 11,519 library outlets that provide public access Internet services did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Maximum Speed Of Public Access: Figures 23 through 42

Figure 25. Public Library Outlet Maximum Speed of 28.8kbps for Public Internet Access by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519 Non-response=556	Poverty			
	Less than 20%	**20%-40%**	**More than 40%**	**Overall**
Metropolitan Status				
Urban	5.6% (n=71)	4.1% (n=27)	3.0% (n=5)	4.9% +/- 2.0% (n=103)
Suburban	13.2% (n=452)	16.7% (n=34)	N/A	13.4% +/- 3.4% (n=486)
Rural	23.2% (n=986)	15.3% (n=144)	23.6% (n=13)	21.8% +/- 4.1% (n=1,143)
Overall	16.9% +/- 3.7% (n=1,509)	11.3% +/- 3.2% (n=204)	7.7% +/- 2.7% (n=18)	**15.8%** +/- 3.6% (n=1,731)

Note 1: The cell n's represent weighted estimates of the 28.8kbps maximum speed of connected public library outlet public access Internet services.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 556 of the 11,519 library outlets that provide public access Internet services did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Maximum Speed Of Public Access: Figures 23 through 42

Figure 26. Public Library Outlet Maximum Speed of 33.6kbps for Public Internet Access by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519 Non-response=556	Poverty			
	Less than 20%	**20%-40%**	**More than 40%**	**Overall**
Metropolitan Status				
Urban	1.6% (n=20)	5.5% (n=36)	1.2% (n=2)	2.8% +/- 1.5% (n=59)
Suburban	7.9% (n=271)	7.8% (n=16)	N/A	7.9% +/- 2.7% (n=288)
Rural	22.0% (n=932)	14.1% (n=133)	9.1% (n=5)	20.4% +/- 4.0% (n=1,071)
Overall	13.7% +/- 3.4% (n=1,224)	10.3% +/- 3.0% (n=186)	3.0% +/- 1.7% (n=7)	**12.9%** +/- 3.3% (n=1,417)

Note 1: The cell n's represent weighted estimates of the 33.6kbps maximum speed of connected public library outlet public access Internet services.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 556 of the 11,519 library outlets that provide public access Internet services did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Maximum Speed Of Public Access: Figures 23 through 42

Figure 27. Public Library Outlet Maximum Speed of 56kbps for Public Internet Access by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519 Non-response=556	Poverty			
	Less than 20%	**20%-40%**	**More than 40%**	**Overall**
Metropolitan Status				
Urban	37.6% (n=475)	24.7% (n=163)	36.9% (n=62)	33.5% +/- 4.7% (n=700)
Suburban	35.4% (n=1,210)	27.1% (n=55)	61.5% (n=8)	35.1% +/- 4.7% (n=1,273)
Rural	27.5% (n=1,168)	43.5% (n=410)	55.4% (n=30)	30.7% +/- 4.6% (n=1,608)
Overall	32.0% +/- 4.6% (n=2,853)	34.8% +/- 4.7% (n=628)	42.6% +/- 4.9% (n=100)	**32.7%** +/- 4.6% (n=3,581)

Note 1: The cell n's represent weighted estimates of the 56kbps maximum speed of connected public library outlet public access Internet services.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 556 of the 11,519 library outlets that provide public access Internet services did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Maximum Speed Of Public Access: Figures 23 through 42

Figure 28. Public Library Outlet Maximum Speed of 64kbps for Public Internet Access by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519 Non-response=556	Poverty			
	Less than 20%	20%-40%	More than 40%	Overall
Metropolitan Status				
Urban	4.8% (n=61)	5.5% (n=36)	2.4% (n=4)	4.8% +/- 2.1% (n=100)
Suburban	4.0% (n=136)	9.9% (n=20)	N/A	4.3% +/- 2.0% (n=156)
Rural	4.0% (n=171)	5.4% (n=51)	N/A	4.3% +/- 2.0% (n=223)
Overall	4.1% +/- 2.0% (n=368)	6.0% +/- 2.3% (n=108)	1.7% +/- 1.2% (n=4)	**4.4%** +/- 1.9% (n=479)

Note 1: The cell n's represent weighted estimates of the 64kbps maximum speed of connected public library outlet public access Internet services.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 556 of the 11,519 library outlets that provide public access Internet services did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Maximum Speed Of Public Access: Figures 23 through 42

Figure 29. Public Library Outlet Maximum Speed of 128kbps for Public Internet Access by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519 Non-response=556	Poverty			
	Less than 20%	**20%-40%**	**More than 40%**	**Overall**
Metropolitan Status				
Urban	9.6% (n=121)	13.7% (n=90)	6.5% (n=11)	10.7% +/- 3.1% (n=223)
Suburban	6.0% (n=204)	7.4% (n=15)	N/A	6.0% +/- 2.4% (n=218)
Rural	2.5% (n=107)	4.3% (n=41)	N/A	2.8% +/- 1.6% (n=148)
Overall	4.8% +/- 2.1% (n=432)	8.1% +/- 2.7% (n=146)	4.7% +/- 2.1% (n=11)	**5.4%** +/- 2.0% (n=589)

Note 1: The cell n's represent weighted estimates of the 128kbps maximum speed of connected public library outlet public access Internet services.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 556 of the 11,519 library outlets that provide public access Internet services did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Maximum Speed Of Public Access: Figures 23 through 42

Figure 30. Public Library Outlet Maximum Speed of 1.45mbps (T1) for Public Internet Access by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519 Non-response=556	Poverty			
	Less than 20%	**20%-40%**	**More than 40%**	**Overall**
Metropolitan Status				
Urban	31.2% (n=394)	45.2% (n=298)	42.9% (n=72)	36.5% +/- 4.7% (n=764)
Suburban	26.2% (n=893)	22.5% (n=46)	25.0% (n=3)	26.0% +/- 4.4% (n=942)
Rural	12.6% (n=536)	16.3% (n=154)	9.1% (n=5)	13.3% +/- 3.4% (n=695)
Overall	20.4% +/- 4.0% (n=1,823)	27.6% +/- 4.5% (n=498)	34.0% +/- 4.7% (n=80)	**21.9%** +/- 4.0% (n=2,401)

Note 1: The cell n's represent weighted estimates of the T1 (1.45mbps) maximum speed of connected public library outlet public access Internet services.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 556 of the 11,519 library outlets that provide public access Internet services did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Maximum Speed Of Public Access: Figures 23 through 42

Figure 31. Public Library Outlet Maximum Speed of 10mbps (Cable) for Public Internet Access by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519 Non-response=556	Poverty			
	Less than 20%	**20%-40%**	**More than 40%**	**Overall**
Metropolitan Status				
Urban	2.4% (n=30)	N/A	0.6% (n=1)	1.5% +/- 1.2% (n=32)
Suburban	3.0% (n=102)	0.5% (n=1)	N/A	2.8% +/- 1.6% (n=103)
Rural	2.0% (n=86)	1.1% (n=10)	N/A	1.8% +/- 1.3% (n=96)
Overall	2.4% +/- 1.5% (n=218)	0.7% +/- .08% (n=11)	0.4% +/- .07% (n=1)	**2.1%** +/- 1.4% (n=231)

Note 1: The cell n's represent weighted estimates of the cable (10mbps) maximum speed of connected public library outlet public access Internet services.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 556 of the 11,519 library outlets that provide public access Internet services did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Maximum Speed Of Public Access: Figures 23 through 42

Figure 32. Public Library Outlet Maximum Speed Not Identified (Other) for Public Internet Access by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519 Non-response=556	Poverty			
	Less than 20%	**20%-40%**	**More than 40%**	**Overall**
Metropolitan Status				
Urban	2.4% (n=30)	N/A	3.0% (n=5)	1.7% +/- 1.2% (n=35)
Suburban	0.3% (n=11)	4.4% (n=9)	N/A	0.6% +/- .07% (n=21)
Rural	0.3% (n=11)	N/A	N/A	0.2% +/- .04% (n=11)
Overall	0.6% +/- .07% (n=52)	0.5% +/- .07% (n=9)	2.1% +/- 1.4% (n=5)	**0.6%** +/- .07% (n=67)

Note 1: The cell n's represent weighted estimates of the Other maximum speed of connected public library outlet public access Internet services.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 556 of the 11,519 library outlets that provide public access Internet services did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Maximum Speed Of Public Access: Figures 23 through 42

Figure 33. Public Library Outlets with Maximum Speed Less Than 56kbps* for Public Access Internet by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519 Non-response=556	Poverty			
	Less than 20%	**20%-40%**	**More than 40%**	**Overall**
Metropolitan Status				
Urban	12.0% (n=152)	10.9% (n=63)	7.7% (n=13)	11.3% +/- 3.0% (n=237)
Suburban	24.8% (n=848)	27.9% (n=55)	15.4% (n=2)	25.0% +/- 4.3% (n=906)
Rural	51.0% (n=2,164)	29.3% (n=277)	36.4% (n=20)	47.0% +/- 5.0% (n=2,461)
Overall	35.5% +/- 4.8% (n=3,164)	22.5% +/- 4.2% (n=406)	14.9% +/- 3.6% (n=35)	**32.9%** +/- 4.7% (n=3,605)

* The less than 56kbps category combines the 14.4kbps, 28.8kbps, and 33.6kbps public access speeds in survey question 5.

Note 1: The cell n's represent weighted estimates of public library outlet public access Internet services with a maximum speed of less than 56kbps.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty and Figure 23 for the number and percentage of library outlets by public access connection maximum speed.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 556 of the 11,519 library outlets that provide public access Internet services did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Maximum Speed Of Public Access: Figures 23 through 42

Figure 34. Public Library Outlets with Maximum Speed of 56kbps for Public Access Internet by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519 Non-response=556	Poverty			
	Less than 20%	20%-40%	More than 40%	Overall
Metropolitan Status				
Urban	37.6% (n=475)	24.7% (n=163)	36.9% (n=62)	33.5% +/- 4.7% (n=700)
Suburban	35.4% (n=1,210)	27.1% (n=55)	61.5% (n=8)	35.1% +/- 4.7% (n=1,273)
Rural	27.5% (n=1,168)	43.5% (n=410)	55.4% (n=30)	30.7% +/- 4.6% (n=1,608)
Overall	32.0% +/- 4.6% (n=2,853)	34.8% +/- 4.7% (n=628)	42.6% +/- 4.9% (n=100)	**32.7%** +/- 4.6% (n=3,581)

Note 1: The cell n's represent weighted estimates of public library outlet public access Internet services with a maximum speed of 56kbps.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty and Figure 23 for the number and percentage of library outlets by public access connection maximum speed.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 556 of the 11,519 library outlets that provide public access Internet services did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Maximum Speed Of Public Access: Figures 23 through 42

Figure 35. Public Library Outlets with Maximum Speed Greater Than 56kbps* for Public Access Internet by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519 Non-response=556	Poverty			
	Less than 20%	20%-40%	More than 40%	Overall
Metropolitan Status				
Urban	48.0% (n=606)	64.3% (n=424)	52.4% (n=88)	53.5% +/- 5.0% (n=1,119)
Suburban	39.1% (n=1,334)	40.4% (n=82)	25.0% (n=3)	39.1% +/- 4.8% (n=1,420)
Rural	21.2% (n=900)	27.1% (n=256)	9.1% (n=5)	22.2% +/- 4.1% (n=1,161)
Overall	31.8% +/- 4.6% (n=2,841)	42.2% +/- 4.9% (n=763)	40.9% +/- 4.9% (n=96)	**33.7%** +/- 4.7% (n=3,700)

* The greater than 56kbps category combines the 64kbps, 128kbps, T1 (1.45mbps), and cable (10mbps) public access speeds in survey question 5.

Note 1: The cell n's represent weighted estimates of public library outlet public access Internet services with a maximum speed of more than 56kbps.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty and Figure 23 for the number and percentage of library outlets by public access connection maximum speed.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 556 of the 11,519 library outlets that provide public access Internet services did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Maximum Speed Of Public Access: Figures 23 through 42

Figure 36. Public Library Outlet Maximum Speed of Public Internet Access by Metropolitan Status (As a Percentage of Library Outlets Offering Public Internet Access).

	Speed of Public Access*			
Base=11,519 Non-response=556	**Less than 28.8kbps**	**28.8kbps to 56kbps**	**56kbps**	**Greater than 56kbps**
Metropolitan Status				
Urban	3.6% (n=76)	7.7% (n=161)	33.5% (n=700)	53.5% (n=1,119)
Suburban	3.7% (n=133)	21.3% (n=774)	35.1% (n=1,273)	39.1% (n=1,420)
Rural	4.7% (n=248)	42.2% (n=2,213)	30.7% (n=1,608)	22.2% (n=1,161)
Overall	4.2% +/- 1.9% (n=456)	28.7% +/- 4.5% (n=3,148)	32.7% +/- 4.6% (n=3,581)	33.7% +/- 4.7% (n=3,700)

* The less than 28.8kbps category is the 14.4kbps public access speed in survey question 5, the 28.8kbps to 56kbps category combines the 28.8kbps, and 33.6kbps public access speeds in survey question 5, and the greater than 56kbps category combines the 64kbps, 128kbps, T1 (1.45mbps), and cable (10mbps) public access speeds in survey question 5.

Note 1: The cell n's represent weighted estimates of graphical public library outlet public access Internet services with a maximum speed of less than 28.8kbps, 28.8kbps to 56kbps, 56kbps, and greater than 56kbps.

Note 2: Readers should refer to Figure 23 for the total number and percentage of public access Internet services maximum speeds.

Note 3: Due to the weighted statistical analysis technique used to analyze the data, rounding, missing values, and not including the "other" speed category, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 556 of the 11,519 library outlets that provide public access Internet services did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Maximum Speed Of Public Access: Figures 23 through 42

Figure 37. Public Library Outlet Maximum Speed of Public Internet Access by Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

	Speed of Public Access*			
Base=11,519 Non-response=556	**Less than 28.8kbps**	**28.8kbps to 56kbps**	**56kbps**	**Greater than 56kbps**
Poverty				
Less than 20%	4.8% (n=431)	30.6% (n=2,733)	32.0% (n=2,853)	31.8% (n=2,841)
20%-40%	0.9% (n=16)	21.6% (n=380)	34.8% (n=628)	42.4% (n=763)
Greater than 40%	3.8% (n=9)	11.1% (n=26)	42.6% (n=100)	40.9% (n=96)
Overall	4.2% +/- 1.9% (n=456)	28.7% +/- 4.5% (n=3,148)	32.7% +/- 4.6% (n=3,581)	33.7% +/- 4.7% (n=3,700)

* The less than 28.8kbps category is the 14.4kbps public access speed in survey question 5, the 28.8kbps to 56kbps category combines the 28.8kbps, and 33.6kbps public access speeds in survey question 5, and the greater than 56kbps category combines the 64kbps, 128kbps, T1 (1.45mbps), and cable (10mbps) public access speeds in survey question 5.

Note 1: The cell n's represent weighted estimates of graphical public library outlet public access Internet services with a maximum speed of less than 28.8kbps, 28.8kbps to 56kbps, 56kbps, and greater than 56kbps.

Note 2: Readers should refer to Figure 23 for the total number and percentage of public access Internet services maximum speeds.

Note 3: Due to the weighted statistical analysis technique used to analyze the data, rounding, missing values, and not including the "other" speed category, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 556 of the 11,519 library outlets that provide public access Internet services did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

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Figure 38. Public Library Outlets that Provide Graphical Public Internet Access by Speed of Connection (As a Percentage of Library Outlets with Graphical Public Internet Access).	
Base=10,623 Non-response=356	**Graphical Public Internet Access**
Speed of Public Access*	
Less than 56kbps	32.4% +/- 4.7% (n=3,329)
56kbps	32.0% +/- 4.6% (n=3,303)
Greater than 56kbps	34.9% +/- 4.7% (n=3,580)
Total	**100.0%** (n=10,212)

* The less than 56kbps category combines the 14.4kbps, 28.8kbps, and 33.6kbps public access speeds in survey question 5; the greater than 56kbps category combines the 64kbps, 128kbps, T1 (1.45mbps), and cable (10mbps) public access speeds in survey question 5.

Note 1: The cell n's represent weighted estimates of graphical public library outlet public access Internet services with a maximum speed of less than 56kbps, 56kbps, and greater than 56kbps.

Note 2: Readers should refer to Figure 23 for the total number and percentage of public access Internet services maximum speeds and Figure 16 for the total number of connected public library outlets that provide graphical public access to the Internet within each poverty/ metropolitan status cell.

Note 3: Due to the weighted statistical analysis technique used to analyze the data, rounding, missing values, and not including the "other" speed category, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 356 of the 10,623 library outlets that provide graphical public access Internet services did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Maximum Speed Of Public Access: Figures 23 through 42

Figure 39. Public Library Outlets that Provide Graphical Public Internet Access by Speed of Connection and Metropolitan Status (As a Percentage of Library Outlets with Graphical Public Internet Access).

	Speed of Public Access*			
Base=10,623 Non-response=356	**Less than 28.8kbps**	**28.8kbps to 56kbps**	**56kbps**	**Greater than 56kbps**
Metropolitan Status				
Urban	1.2% (n=21)	8.0% (n=143)	31.4% (n=558)	57.6% (n=1,024)
Suburban	2.8% (n=95)	21.5% (n=738)	34.6% (n=1,189)	40.9% (n=1,406)
Rural	4.1% (n=205)	42.1% (n=2,126)	30.8% (n=1,555)	22.8% (n=1,151)
Overall	3.1% +/- 1.7% (n=321)	29.3% +/- 4.5% (n=3,008)	32.2% +/- 4.6% (n=3,303)	34.9% +/- 4.7% (n=3,580)

* The less than 28.8kbps category is the 14.4kbps public access speed in survey question 5, the 28.8kbps to 56kbps category combines the 28.8kbps, and 33.6kbps public access speeds in survey question 5, and the greater than 56kbps category combines the 64kbps, 128kbps, T1 (1.45mbps), and cable (10mbps) public access speeds in survey question 5.

Note 1: The cell n's represent weighted estimates of graphical public library outlet public access Internet services with a maximum speed of less than 28.8kbps, 28.8kbps to 56kbps, 56kbps, and greater than 56kbps.

Note 2: Readers should refer to Figure 23 for the total number and percentage of public access Internet services maximum speeds and Figure 16 for the total number of connected public library outlets that provide graphical public access to the Internet within each poverty/ metropolitan status cell.

Note 3: Due to the weighted statistical analysis technique used to analyze the data, rounding, missing values, and not including the "other" speed category, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 356 of the 10,623 library outlets that provide graphical public access Internet services did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Maximum Speed Of Public Access: Figures 23 through 42

Figure 40. Public Library Outlets that Provide Graphical Public Internet Access by Speed of Connection and Poverty (As a Percentage of Library Outlets with Graphical Public Internet Access).

	Speed of Public Access*			
Base=10,623 Non-response=356	**Less than 28.8kbps**	**28.8kbps to 56kbps**	**56kbps**	**Greater than 56kbps**
Poverty				
Less than 20%	3.7% (n=314)	31.3% (n=2,624)	31.4% (n=2,630)	32.9% (n=2,758)
20%-40%	0.2% (n=3)	21.3% (n=360)	35.1% (n=594)	43.3% (n=733)
Greater than 40%	2.1% (n=4)	12.2% (n=24)	39.8% (n=78)	45.1% (n=88)
Overall	3.1% +/- 1.7% (n=321)	29.3% +/- 4.5% (n=3,008)	32.2% +/- 4.6% (n=3,303)	34.9% +/- 4.7% (n=3,580)

* The less than 28.8kbps category is the 14.4kbps public access speed in survey question 5, the 28.8kbps to 56kbps category combines the 28.8kbps, and 33.6kbps public access speeds in survey question 5, and the greater than 56kbps category combines the 64kbps, 128kbps, T1 (1.45mbps), and cable (10mbps) public access speeds in survey question 5.

Note 1: The cell n's represent weighted estimates of graphical public library outlet public access Internet services with a maximum speed of less than 28.8kbps, 28.8kbps to 56kbps, 56kbps, and greater than 56kbps.

Note 2: Readers should refer to Figure 23 for the total number and percentage of public access Internet services maximum speeds and Figure 16 for the total number of connected public library outlets that provide graphical public access to the Internet within each poverty/ metropolitan status cell.

Note 3: Due to the weighted statistical analysis technique used to analyze the data, rounding, missing values, and not including the "other" speed category, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 356 of the 10,623 library outlets that provide graphical public access Internet services did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

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Maximum Speed Of Public Access: Figures 23 through 42

Figure 41. Public Library Outlets that Provide Graphical Public Internet Access by Speed of Connection and Metropolitan Status (As a Percentage of All Library Outlets).

	Speed of Public Access*			
Base=15,718 Non-response=556	**Less than 28.8kbps**	**28.8kbps to 56kbps**	**56kbps**	**Greater than 56kbps**
Metropolitan Status				
Urban	0.8% (n=21)	5.3% (n=143)	20.7% (n=558)	38.1% (n=1,024)
Suburban	1.9% (n=95)	14.7% (n=738)	23.6% (n=1,189)	28.3% (n=1,406)
Rural	2.5% (n=205)	26.2% (n=2,126)	14.2% (n=1,555)	22.8% (n=1,151)
Overall	2.1% +/- 1.6% (n=321)	19.8% +/- 4.0% (n=3,008)	21.7% +/- 4.1% (n=3,303)	23.6% +/- 4.1% (n=3,580)

* The less than 28.8kbps category is the 14.4kbps public access speed in survey question 5, the 28.8kbps to 56kbps category combines the 28.8kbps, and 33.6kbps public access speeds in survey question 5, and the greater than 56kbps category combines the 64kbps, 128kbps, T1 (1.45mbps), and cable (10mbps) public access speeds in survey question 5.

Note 1: The cell n's represent weighted estimates of graphical public library outlet public access Internet services with a maximum speed of less than 28.8kbps, 28.8kbps to 56kbps, 56kbps, and greater than 56kbps.

Note 2: Readers should refer to Figure 23 for the total number and percentage of public access Internet services maximum speeds and Figure 16 for the total number of connected public library outlets that provide graphical public access to the Internet within each poverty/ metropolitan status cell.

Note 3: Due to the weighted statistical analysis technique used to analyze the data, rounding, missing values, and not including the "other" speed category, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 556 of the 15,718 library outlets did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Maximum Speed Of Public Access: Figures 23 through 42

Figure 42. Public Library Outlets that Provide Graphical Public Internet Access by Speed of Connection and Poverty (As a Percentage of All Library Outlets).

	Speed of Public Access*			
Base=15,718 Non-response=556	**Less than 28.8kbps**	**28.8kbps to 56kbps**	**56kbps**	**Greater than 56kbps**
Poverty				
Less than 20%	2.5% (n=314)	20.6% (n=2,624)	20.6% (n=2,630)	21.6% (n=2,758)
20%-40%	0.1% (n=3)	13.6% (n=360)	22.5% (n=594)	27.8% (n=733)
Greater than 40%	1.3% (n=4)	7.6% (n=24)	24.6% (n=78)	27.8% (n=88)
Overall	2.1% +/- 1.6% (n=321)	19.8% +/- 4.0% (n=3,008)	21.7% +/- 4.1% (n=3,303)	23.6% +/- 4.1% (n=3,580)

* The less than 28.8kbps category is the 14.4kbps public access speed in survey question 5, the 28.8kbps to 56kbps category combines the 28.8kbps, and 33.6kbps public access speeds in survey question 5, and the greater than 56kbps category combines the 64kbps, 128kbps, T1 (1.45mbps), and cable (10mbps) public access speeds in survey question 5.

Note 1: The cell n's represent weighted estimates of graphical public library outlet public access Internet services with a maximum speed of less than 28.8kbps, 28.8kbps to 56kbps, 56kbps, and greater than 56kbps.

Note 2: Readers should refer to Figure 23 for the total number and percentage of public access Internet services maximum speeds and Figure 16 for the total number of connected public library outlets that provide graphical public access to the Internet within each poverty/ metropolitan status cell.

Note 3: Due to the weighted statistical analysis technique used to analyze the data, rounding, missing values, and not including the "other" speed category, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: Non-response is indicated as a weighted non-response. Thus, 556 of the 15,718 library outlets did not respond to this question.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Special Software/Hardware For Persons With Disabilities, Filtering Software, and Acceptable Use Policies For Public Access Internet Services: Figures 43 through 56

Figure 43. Public Library Outlets that Provide Special Software/Hardware for Persons with Disabilities on All of Their Public Access Internet Workstations by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519	Poverty			
	Less than 20%	20%-40%	More than 40%	Overall
Metropolitan Status				
Urban	2.2% (n=30)	2.5% (n=18)	1.1% (n=2)	2.3% +/- 1.4% (n=51)
Suburban	1.3% (n=45)	N/A	N/A	1.2% +/- 1.0% (n=45)
Rural	3.4% (n=150)	8.3% (n=82)	N/A	4.2% +/- 2.0% (n=232)
Overall	2.4% +/- 1.5% (n=226)	5.3% +/- 2.2% (n=100)	0.8% +/- .09% (n=2)	**2.9%** +/- 1.6% (n=328)

Note 1: The cell n's represent weighted estimates of connected public library outlets that provide special software/hardware for persons with disabilities on all public access Internet terminals/workstations.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Special Software/Hardware For Persons With Disabilities, Filtering Software, and Acceptable Use Policies For Public Access Internet Services: Figures 43 through 56

Figure 44. Public Library Outlets that Provide Special Software/Hardware for Persons with Disabilities on Some of their Public Access Internet Workstations by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519	Poverty			
	Less than 20%	20%-40%	More than 40%	Overall
Metropolitan Status				
Urban	23.1% (n=313)	25.0% (n=181)	26.6% (n=49)	24.1% +/- 4.2% (n=543)
Suburban	14.9% (n=531)	18.8% (n=39)	N/A	15.1% +/- 3.6% (n=571)
Rural	7.8% (n=343)	10.4% (n=103)	14.5% (n=8)	8.3% +/- 2.7% (n=454)
Overall	12.7% +/- 3.3% (n=1,188)	16.9% +/- 3.7% (n=322)	23.0% +/- 4.2% (n=57)	**13.6%** +/- 3.4% (n=1,567)

Note 1: The cell n's represent weighted estimates of connected public library outlets that use filtering software on some of their public access Internet terminals/workstations.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Special Software/Hardware For Persons With Disabilities, Filtering Software, and Acceptable Use Policies For Public Access Internet Services: Figures 43 through 56

Figure 45. Public Library Outlets that Provide Special Software/Hardware for Persons with Disabilities on None of their Public Access Internet Workstations by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519	Poverty			
	Less than 20%	20%-40%	More than 40%	Overall
Metropolitan Status				
Urban	74.6% (n=1,011)	72.5% (n=524)	72.3% (n=133)	73.8% +/- 4.4% (n=1,666)
Suburban	83.8% (n=2,985)	81.3% (n=169)	100.0% (n=14)	83.7% +/- 3.7% (n=3,166)
Rural	88.9% (n=3,932)	81.4% (n=810)	85.5% (n=47)	87.5% +/- 3.3% (n=4,789)
Overall	84.9% +/- 3.5% (n=7,928)	77.9% +/- 4.1% (n=1,503)	76.1% +/- 4.3% (n=193)	**83.6%** +/- 3.7% (n=9,624)

Note 1: The cell n's represent weighted estimates of connected public library outlets that provide special software/hardware for persons with disabilities on none of their public access Internet terminals/workstations.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Special Software/Hardware For Persons With Disabilities, Filtering Software, and Acceptable Use Policies For Public Access Internet Services: Figures 43 through 56

Figure 46. Public Library Outlets that Provide Special Software/Hardware for Persons with Disabilities by Metropolitan Status (As a Percentage of Library Outlets Offering Public Internet Access).

	Special Software/ Hardware Status			
Base=11,519	On all public access terminals/ workstations	On some public access terminals/ workstations	On no public access terminals/ workstations	Total
Metropolitan Status				
Urban	2.3% +/- 1.4% (n=51)	24.1% +/- 4.2% (n=543)	73.8% +/- 4.4% (n=1,666)	100.0% (n=2,261)
Suburban	1.2% +/- 1.0% (n=45)	15.1% +/- 3.6% (n=571)	83.7% +/- 3.7% (n=3,166)	100.0% (n=3,783)
Rural	4.2% +/- 2.0% (n=232)	8.3% +/- 2.7% (n=454)	87.5% +/- 3.3% (n=4,789)	100.0% (n=5,475)
Overall	2.9% +/- 1.6% (n=328)	13.6% +/- 3.4% (n=1,567)	83.6% +/- 3.7% (n=9,624)	100.0% (n=11,519)

Note 1: The cell n's represent weighted estimates of connected public library outlets that provide special software/hardware for persons with disabilities on all, some, or none of their public access Internet workstations/terminals.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Special Software/Hardware For Persons With Disabilities, Filtering Software, and Acceptable Use Policies For Public Access Internet Services: Figures 43 through 56

Figure 47. Public Library Outlets that Provide Special Software/Hardware for Persons with Disabilities by Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

	Special Software/Hardware Status			
Base=11,519	On all public access terminals/ workstations	On some public access terminals/ workstations	On no public access terminals/ workstations	Total
Poverty				
Less than 20%	2.4% +/- 1.5% (n=226)	12.7% +/- 3.3% (n=1,188)	84.9% +/- 3.5% (n=7,928)	100.0% (n=9,342)
20%-40%	5.3% +/- 2.2% (n=100)	16.9% +/- 3.7% (n=322)	77.9% +/- 4.1% (n=1,503)	100.0% (n=1,925)
More than 40%	0.8% +/- .09% (n=2)	23.0% +/- 4.2% (n=57)	76.1% +/- 4.3% (n=193)	100.0% (n=252)
Overall	2.9% +/- 1.6% (n=328)	13.6% +/- 3.4% (n=1,567)	83.5% +/- 3.7% (n=9,624)	100.0% (n=11,519)

Note 1: The cell n's represent weighted estimates of connected public library outlets that provide special software/hardware for persons with disabilities on all, some, or none of their public access Internet workstations/terminals.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Special Software/Hardware For Persons With Disabilities, Filtering Software, and Acceptable Use Policies For Public Access Internet Services: Figures 43 through 56

Figure 48. Public Library Outlets that Use Filtering Software on All of their Public Internet Access Workstations by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519	Poverty			
	Less than 20%	20%-40%	More than 40%	Overall
Metropolitan Status				
Urban	8.2% (n=111)	10.0% (n=72)	8.7% (n=16)	8.8% +/- 2.8% (n=199)
Suburban	7.0% (n=249)	11.1% (n=23)	14.3% (n=2)	7.2% +/- 2.5% (n=273)
Rural	7.3% (n=321)	8.3% (n=82)	3.6% (n=2)	7.4% +/- 2.6% (n=404)
Overall	7.3% +/- 2.6% (n=681)	9.3% +/- 2.9% (n=177)	7.7% +/- 2.6% (n=19)	**7.6%** +/- 2.6% (n=878)

Note 1: The cell n's represent weighted estimates of connected public library outlets that use filtering software on all public access Internet terminals/workstations.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Special Software/Hardware For Persons With Disabilities, Filtering Software, and Acceptable Use Policies For Public Access Internet Services: Figures 43 through 56

Figure 49. Public Library Outlets that Use Filtering Software on Some of their Public Internet Access Workstations by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519	Poverty			
	Less than 20%	20%-40%	More than 40%	Overall
Metropolitan Status				
Urban	6.7% (n=91)	11.2% (n=81)	7.1% (n=13)	8.2% +/- 2.8% (n=185)
Suburban	9.5% (n=339)	8.7% (n=18)	14.3% (n=2)	9.5% +/- 2.9% (n=357)
Rural	4.8% (n=214)	4.1% (n=41)	3.6% (n=2)	4.7% +/- 2.1% (n=257)
Overall	6.9% +/- 2.5% (n=644)	7.2% +/- 2.6% (n=138)	6.9% +/- 2.5% (n=17)	**7.0%** +/- 3.4% (n=801)

Note 1: The cell n's represent weighted estimates of connected public library outlets that provide special software/hardware for persons with disabilities on some of their public access Internet terminals/workstations.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*. Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Special Software/Hardware For Persons With Disabilities, Filtering Software, and Acceptable Use Policies For Public Access Internet Services: Figures 43 through 56

Figure 50. Public Library Outlets that Use Filtering Software on None of their Public Internet Access Workstations by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519	Poverty			
	Less than 20%	20%-40%	More than 40%	Overall
Metropolitan Status				
Urban	85.1% (n=1,152)	78.7% (n=569)	83.6% (n=153)	82.9% +/- 3.8% (n=1,875)
Suburban	83.5% (n=2,974)	80.7% (n=167)	78.6% (n=11)	83.3% +/- 3.7% (n=3,152)
Rural	87.9% (n=3,890)	87.6% (n=872)	94.5% (n=52)	87.9% +/- 3.3% (n=4,813)
Overall	85.8% +/- 3.5% (n=8,016)	83.1% +/- 3.8% (n=1,599)	85.4% +/- 3.5% (n=216)	**85.3%** +/- 3.7% (n=9,839)

Note 1: The cell n's represent weighted estimates of connected public library outlets that use filtering software on none of their public access Internet terminals/workstations.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Special Software/Hardware For Persons With Disabilities, Filtering Software, and Acceptable Use Policies For Public Access Internet Services: Figures 43 through 56

Figure 51. Public Library Outlets that Have an Acceptable Use Policy for Their Public Internet Access Workstations by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519	Poverty			
	Less than 20%	20%-40%	More than 40%	Overall
Metropolitan Status				
Urban	85.8% (n=1,162)	89.9% (n=641)	88.5% (n=162)	87.3% +/- 3.3% (n=1,965)
Suburban	86.0% (n=3,064)	85.5% (n=178)	64.3% (n=9)	85.9% +/- 3.5% (n=3,250)
Rural	82.8% (n=3,665)	84.5% (n=841)	85.5% (n=47)	83.1% +/- 3.7% (n=4,553)
Overall	84.5% +/- 3.6% (n=7,891)	86.6% +/- 3.4% (n=1,660)	86.3% +/- 3.4% (n=214)	**84.8%** +/- 3.6% (n=9,769)

Note 1: The cell n's represent weighted estimates of connected public library outlets that have an acceptable use policy in place for their public access Internet services.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Special Software/Hardware For Persons With Disabilities, Filtering Software, and Acceptable Use Policies For Public Access Internet Services: Figures 43 through 56

Figure 52. Public Library Outlets that Do Not Have an Acceptable Use Policy for Their Public Internet Access Workstations by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519	Poverty			
	Less than 20%	20%-40%	More than 40%	Overall
Metropolitan Status				
Urban	3.0% (n=40)	1.3% (n=9)	0.5% (n=1)	2.3% +/- 1.4% (n=51)
Suburban	2.9% (n=102)	1.4% (n=3)	N/A	2.8% +/- 1.6% (n=104)
Rural	3.9% (n=171)	2.1% (n=21)	N/A	3.5% +/- 1.8% (n=192)
Overall	3.4% +/- 1.8% (n=314)	1.7% +/- 1.2% (n=32)	0.4% +/- .07% (n=1)	**3.0%** +/- 1.7% (n=347)

Note 1: The cell n's represent weighted estimates of connected public library outlets that do not have an acceptable use policy in place for their public access Internet services.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Special Software/Hardware For Persons With Disabilities, Filtering Software, and Acceptable Use Policies For Public Access Internet Services: Figures 43 through 56

Figure 53. Public Library Outlets that are Currently Developing an Acceptable Use Policy for Their Public Internet Access Workstations by Metropolitan Status and Poverty (As a Percentage of Library Outlets Offering Public Internet Access).

Base=11,519	Poverty			
	Less than 20%	20%-40%	More than 40%	Overall
Metropolitan Status				
Urban	11.2% (n=152)	8.7% (n=63)	10.4% (n=19)	10.4% +/- 3.1% (n=234)
Suburban	11.1% (n=396)	13.1% (n=27)	35.7% (n=5)	11.3% +/- 3.2% (n=427)
Rural	13.5% (n=600)	13.5% (n=133)	15.7% (n=8)	13.5% +/- 3.4% (n=742)
Overall	12.3% +/- 3.3% (n=1,147)	11.7% +/- 3.2% (n=224)	13.0% +/- 3.3% (n=32)	**12.2%** +/- 3.3% (n=1,403)

Note 1: The cell n's represent weighted estimates of connected public library outlets that are currently developing an acceptable use policy in place for their public access Internet services.

Note 2: Readers should refer to Figures 3 and 4 for the total number of public library outlets that provide public access to the Internet by metropolitan status and poverty.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Special Software/Hardware For Persons With Disabilities, Filtering Software, and Acceptable Use Policies For Public Access Internet Services: Figures 43 through 56

Figure 54. Public Library Outlet Public Internet Access Terminal/Workstation Filtering Software Use by Acceptable Use Policy for Public Internet Access (As Applied to Library Outlets Offering Public Internet Access).[4]

Base=11,519	Internet Filtering Software Status		
	On all public access terminals/ workstations	**On some public access terminals/ workstations**	**On no public access terminals/ workstations**
Acceptable Use Policy for Public Internet Access Status			
Acceptable Use Internet Policy In Place	88.4% +/- 3.2% (n=775)	88.8% +/- 3.2% (n=711)	84.2% +/- 3.6% (n=8,283)
Currently Developing an Acceptable Use Internet Policy	11.5% +/- 3.2% (n=101)	8.7% +/- 2.8% (n=70)	12.5% +/- 3.3% (n=1,231)
No Acceptable Use Internet Policy in Place	0.1% +/- 0.03% (n=1)	2.5% +/- 1.5% (n=20)	3.3% +/- 1.8% (n=326)
Total	100.0% (n=878)	100.0% (n=801)	100.0% (n=9,839)

Note 1: The cell n's represent weighted estimates of connected public library outlets that have an acceptable use policy in place on all, some, or none of their public access Internet workstations/terminals.

Note 2: Readers should refer to Figures 48-50 for the total number of public library outlets that provide public access to the Internet and use filtering software on all, some, or none of their public access terminals/ workstations within each poverty/metropolitan status cell and Figures 51-53 for the total number of public library outlets that provide public access to the Internet and have, do not have, or are developing an acceptable use policy for their public access Internet services.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: The cells are calculated based on Internet filtering software status, so that each column totals 100%. Consequently, percentages cannot be added across rows. See Figure 55 for calculations based on acceptable use policy status and Figure 56 for calculations based on the overall distribution of filtering software and acceptable use policies.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Special Software/Hardware For Persons With Disabilities, Filtering Software, and Acceptable Use Policies For Public Access Internet Services: Figures 43 through 56

Figure 55. Public Library Outlet Acceptable Use Policy for Public Internet Access by Public Internet Access Terminal/Workstation Filtering Software Use (As Applied to Library Outlets Offering Public Internet Access).[4]

Base = 11,519	Internet Filtering Software Status			
	On all public access terminals/ workstations	**On some public access terminals/ workstations**	**On no public access terminals/ workstations**	**Total**
Acceptable Use Policy for Public Internet Access Status				
Acceptable Use Internet Policy In Place	7.9% +/- 3.2% (n=775)	7.3% +/- 3.2% (n=711)	84.8% +/- 3.6% (n=8,283)	100.0% (n=9,769)
Currently Developing and Acceptable Use Internet Policy	7.2% +/- 3.2% (n=101)	5.0% +/- 2.8% (n=70)	87.8% +/- 3.3% (n=1,231)	100.0% (n=1,403)
No Acceptable Use Internet Policy in Place	0.3% +/- 0.03% (n=1)	5.8% +/- 1.5% (n=20)	93.7% +/- 1.8% (n=326)	100.0% (n=347)

Note 1: The cell n's represent weighted estimates of connected public library outlets that have an acceptable use policy in place on all, some, or none of their public access Internet workstations/terminals.

Note 2: Readers should refer to Figures 48-50 for the total number of connected public library outlets that provide public access to the Internet and use filtering software on all, some, or none of their public access terminals/workstations within each poverty/metropolitan status cell and Figures 51-53 for the total number of connected public library outlets that provide public access to the Internet and have, do not have, or are developing an acceptable use policy for their public access Internet services.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

Note 4: The cells are calculated based on acceptable use policy status, so that each row totals 100%. Consequently, percentages cannot be added down columns. See Figure 54 for calculations based on Internet filtering software status and Figure 56 for calculations based on the overall distribution of filtering software and acceptable use policies.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

Special Software/Hardware For Persons With Disabilities, Filtering Software, and Acceptable Use Policies For Public Access Internet Services: Figures 43 through 56

Figure 56. Overall Distribution of Public Library Outlet Acceptable Use Policy for Public Internet Access and Public Internet Access Terminal/Workstation Filtering Software Use (As a Percentage of Library Outlets Offering Public Internet Access).

Base = 11,519	Internet Filtering Software Status			
	On all public access terminals/ workstations	On some public access terminals/ workstations	On no public access terminals/ workstations	Overall
Acceptable Use Policy for Public Internet Access Status				
Acceptable Use Internet Policy In Place	6.7% +/- 3.2% (n=775)	6.2% +/- 3.2% (n=711)	71.9% +/- 3.6% (n=8,283)	84.8% +/- 3.6% (n=9,769)
Currently Developing and Acceptable Use Internet Policy	0.9% +/- 3.2% (n=101)	0.6% +/- 2.8% (n=70)	10.7% +/- 3.3% (n=1,231)	12.2% +/- 3.3% (n=1,403)
No Acceptable Use Internet Policy in Place	0.0% +/- 0.03% (n=1)	0.2% +/- 1.5% (n=20)	2.9% +/- 1.8% (n=326)	3.0% +/- 1.7% (n=347)
Overall	7.6% +/- 2.6% (n=878)	7.0% +/- 3.4% (n=801)	85.3% +/- 3.7% (n=9,839)	100.0% (n=11,519)

Note 1: The cell n's represent weighted estimates of connected public library outlets that have an acceptable use policy in place on all, some, or none of their public access Internet workstations/terminals.

Note 2: Readers should refer to Figures 48-50 for the total number of connected public library outlets that provide public access to the Internet and use filtering software on all, some, or none of their public access terminals/workstations within each poverty/metropolitan status cell and Figures 51-53 for the total number of connected public library outlets that provide public access to the Internet and have, do not have, or are developing an acceptable use policy for their public access Internet services.

Note 3: Due to the weighted statistical analysis technique used to analyze the data and rounding, not all cell n's will sum or cell percentages will total to 100.0%.

From: Bertot, John Carlo, and McClure, Charles R. (1998). *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report.* Washington, D.C.: U.S. National Commission on Libraries and Information Science.

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APPENDIX E: CONTRACTOR'S ANALYSIS OF THE SURVEY RESULTS[39]

[39] From *The 1998 National Survey of U.S. Public Library Outlet Internet Connectivity: Final Report*, by John Carlo Bertot and Charles R McClure, Washington, D.C.: U.S. National Commission on Libraries and Information Science, 1998.

Executive Summary

Previous national studies of public libraries and the Internet documented the state and changes of public library Internet connectivity, type of connectivity, public access services, and costs associated with such connectivity from public library central or administrative units (Bertot, McClure, and Fletcher, 1997; Bertot, McClure, and Zweizig, 1996; McClure, Bertot, and Zweizig, 1994).

The 1998 data studied *all* library outlets (defined as both central or system/administrative units and branches, excluding bookmobiles and 227 outlets for which it was not possible to determine the geocodes), the poverty level of the users served by these outlets, and the library's metropolitan status as urban, suburban, and rural (see Figure 1 for a detailed breakdown of public library outlets and their poverty-metropolitan status categories). This comprehensive picture can provide the public library community, policy makers, and researchers with a more informed picture of which library outlets in different types of poverty and/or urban/rural settings provide what level and type of Internet connectivity. Such data provide an important benchmark describing how public library outlets support Universal Service objectives as legislated through the *Telecommunications Act of 1996* (P.L. 104-104). The data can also inform policy makers as to possible future changes and impacts resulting from the disbursement of funds to these public library outlets in support of Universal Service objectives.

Key Findings

Overall the study finds that there are some significant disparities among public library outlets in terms of their connectivity to the Internet, the type and speed of their public access connections to the Internet, and Internet-based service provision issues. The data also show, nationally, the degree to which public library outlets -- especially those in rural areas and areas with high poverty -- contribute to enhanced Universal Service as per the goals of the *Telecommunications Act of 1996*.

The key findings presented here offer highlights from the study. The following sections of this report contain detailed results and tables describing public library outlet Internet access, connectivity, and use of the Internet.

Internet Connectivity and Public Access [Figures 2-13]

Overall, the data show that 83.6% of all public library outlets have some type of connection to the Internet. The study also found that some disparities exist among public library outlets in terms of Internet access by metropolitan status. For example:

- 91.0% of urban public library outlets are connected to the Internet;
- 88.1% of suburban public libraries are connected to the Internet; and
- 78.4% of rural public library outlets are connected to the Internet.

The study also shows that disparities in terms of connectivity by different poverty levels is minimal:

- 84.1% of public library outlets are connected that serve areas with 20% or less poverty;
- 80.9% of public library outlets are connected that serve areas with 20-40% poverty; and

- 83.3% of public library outlets are connected that serve areas with more than 40% poverty.

A majority of public library outlets -- 73.3% -- provide public Internet access services (87.7% of connected public library outlets). However, there are disparities in public access by metropolitan status:

- 84.0% of urban library outlets provide public access (92.3% of connected urban public library outlets);
- 76.4% of suburban library outlets provide public access (87.1% of connected suburban public library outlets); and
- 67.6% of rural library outlets provide public access (86.3% of connected rural library outlets).

Thus, rural library outlet patrons are less likely to have access to a public library outlet that provides public access Internet services than urban and suburban library outlet patrons. Such disparities do not appear to exist when looking at public access services by poverty.

The data also show that 93.2% of public library outlets plan to have some type of Internet connection by June 1999. Of that 93.2%, 81.2% plan to provide public Internet access services and 12.0% will have an Internet connection for library staff use only. Once again, there is a projected disparity in public access Internet services by metropolitan status:

- 89.7% of urban library outlets will offer public Internet services by June 1999;
- 84.6% of suburban library outlets will offer public Internet services by June 1999; and
- 76.3% of rural library outlets will offer public Internet services by June 1999.

Again, rural library outlet patrons will be less likely to have access to a public library outlet that provides public access Internet services than urban and suburban library outlet patrons. Such disparities do not appear to exist when looking at public access services by poverty.

Type of Outlet Public Access Internet Services [Figures 14-22]

An important distinction regarding the type of connectivity is whether public library outlets have *graphical* public access to the Internet rather than only text-based access. For many Internet and web-based applications, graphical access is now essential. The 1998 data show that 68.6% of public library outlets provide their users with graphical access to the Internet. The data also show that this average varies only slightly by metropolitan status or poverty level.

Of those library outlets connected to the Internet, 5.8% provide only text-based access to the Internet. Urban outlets and outlets serving poverty levels of greater than 40% are more likely to provide only text-based public access Internet services. Of interest is that rural library outlets -- 86.9% -- are more likely to provide only graphical public access to the Internet as opposed to urban and suburban outlets, with 69.4% and 77.8% respectively.

Overall, however, the number of public access text-based terminals and graphical workstations are few. Indeed, 73.1% of library outlets offer five or fewer text-based public access terminals for patron use. Similarly, 73.6% of library outlets offer three or fewer graphical public access workstations for patron use.

Public Access Services Connection Speed [Figures 23-42]

A critical factor that determines the types of applications that are possible to use via a library outlet's public access connection is the speed -- bandwidth -- of that connection. Overall:

- 32.9% of public library outlets have public access connection speeds of 33.6kbps or less (primarily 28.8kbps -- 15.8% -- and 33.6kbps -- 12.9%);
- 32.7% of public library outlets have public access connection speeds of 56kbps; and
- 33.7% of public library outlets have public access connection speeds of greater than 56kbps (primarily T1 service -- 21.9%).

Urban settings have almost three times the percentage of outlets with T1 connectivity than rural outlets (36.5% versus 13.3%). Interestingly, however, 34.0% of outlets serving poverty levels of more than 40% have T1 connections whereas 20.4% of outlets serving poverty levels of less than 20% have T1 connectivity (a review of the data shows that this is likely due to urban library systems that have outlets in high poverty areas).

Issues with Public Access Internet Services [Figures 43-56]

Public library outlet survey respondents were asked to identify the extent to which their public Internet access services:

- Provided special software/hardware for persons with disabilities;
- Used filtering software; and
- Had acceptable use policies.

This section presents selected findings from these survey questions.

Overall, 2.9% of public library outlets provide special software/hardware for persons with disabilities on all of their public access terminals/workstations and 13.6% do so on some of their public access terminals/workstations. Urban library outlets are more likely to provide special software/hardware for persons with disabilities on all or some of their public access terminals/workstations -- 26.4% -- as opposed to suburban public library outlets with 16.3% and rural library outlets with 12.5%.

A vast majority of public library outlets -- 85.3% -- do not use filtering software for their public access Internet services. This trend holds true across public library outlet metropolitan status and poverty classifications.

The data reveal, however, that 84.8% of public library outlets have a formal acceptable use policy for their public access Internet services. Another 12.2% of public library outlets are in the process of developing a formal acceptable use policy for their public access Internet services. By June 1999 or sooner, therefore, 97.0% of public library outlets will have some type of formal acceptable use policy for their public access Internet services in place.

Background

This study is the first national effort to identify the extent and type of Internet connectivity and Internet service provision issues at the public library *outlet* level. The term *outlet* includes 15,945 public library facilities of which 8,921 are central or system/administrative units and 7,024 are branch public libraries (National Center for Education Statistics, 1997). In addition, the study collected data

to analyze library outlets in terms of the poverty levels of the community they serve and whether the library is in an urban, suburban, or rural setting.

The study collected data during May and June 1998 from 2,500[40] public library outlets that received a quick-response survey asking about the library outlet's connectivity, speed, access, and other topics related to their provision of Internet services (see Appendix A for a copy of the survey instrument[41]). These libraries were selected by a carefully drawn weighted sample that resulted in a 75.5% response rate. An innovative aspect of the study was the use of geodata that linked Census Bureau poverty data to the geographic area served by individual public library outlets. Details of the study method and research design can be found in Appendix B[42].

One purpose of the study was to produce findings to better describe the role of public library outlets in promoting Universal Service objectives. The Universal Service Fund (USF), as established by the *Telecommunications Act of 1996* (P.L. 104-104), is charged with the responsibility of reimbursing public libraries for up to 90% of their telecommunications costs depending on (a) the poverty rate of the area served by the library (as measured by the percentage of students eligible for school lunch programs) and (b) their urban/rural status. This study is one means to monitor the implementation of Universal Service initiatives as defined in the *Telecommunications Act of 1996*.

Terms and Context

It is important to understand that the study relied on the Metropolitan Status codes used by the U.S. Bureau of the Census and ascribed to the communities served by the library outlets surveyed in this study. Those codes are: CC, Central City (urban); NC, Metropolitan area but not within central city limits (suburban); and NO, Not in a metropolitan area (rural).

Outlets were categorized based on the level of poverty among the individuals living within a specified radius of their buildings. The radius varied for central cities, suburbs (incorporated places within metropolitan areas, but not central cities), and non-metropolitan areas. Caliper Corporation Maptitude Geographic Information System software was used to estimate the amount of poverty within this circular area (defined as 1 mile for urban library outlets, 3 miles for suburban library outlets, and 10 miles for rural library outlets), which usually encompassed portions of several different census block groups. Outlets were divided into three groups, based on the calculated percentage of the population living below the Census's poverty threshold: less than 20%, 20-39%, and 40% or more. Additional detail about the terms and study method can be found in Appendix B[43].

As context for interpreting this data, the study shows that 17.1% of all public library outlets are in urban areas; 31.4% are in suburban areas; and 51.5% are in rural areas. Furthermore, 81.2% of public library outlets serve poverty levels of less than 20%; 16.8% serve users in poverty levels of 20-40%; and only 2.0% of public library outlets serve users in poverty levels of more than 40%.

Comparisons to Earlier Data

Data concerning public library involvement with and use of the Internet were collected in 1994, 1996, and 1997 (Bertot, McClure, and Fletcher, 1997; Bertot, McClure, and Zweizig, 1996; McClure, Bertot, and Zweizig, 1994). The 1994 through 1997 studies, however, collected data from public

[40] The original sample consisted of 2,560 library outlets based on 1994 public library data (NCES, 1997). However, due to library facility closures and consolidations, the sample was adjusted to 2,500 outlets.
[41] In this presentation of the contractors' report, the survey instrument appears in Appendix B.
[42] In this presentation of the contractors' report, the methodology appears in Appendix C.
[43] Ibid.

library *systems*, not outlets. Direct comparisons to the 1994 through 1997 data from data reported here should be made *only with extreme caution*.

Themes and Implications from the 1998 Findings

Findings from this survey suggest that overall, public libraries in the United States continue to make progress in connecting to the Internet and in the quality of their connectivity. On closer review of the data, however, there are other themes and issues requiring additional consideration. While there are numerous key themes and implications that can be discussed from the 1998 data, the following appear to be especially important.

Improved Public Library Internet Connectivity With Continued Disparities in Access

The data show that 83.6% of all public libraries have some type of connectivity and that by June 1999 approximately 93.2% are likely to have some type of connectivity to the Internet. But it is also important to recognize that, as of June 1998:

- 16.4% of public library outlets do *not* have an Internet connection; and
- 10.3% of those library outlets currently connected to the Internet do *not* provide public access.

Said differently, 26.7% of all public library outlets do *not* provide public access to the Internet. Disparities continue to exist in terms of which types of public libraries provide connectivity and public access.

Rural public libraries still lag behind urban and suburban public libraries in having an Internet connection and providing public access. Thus, continued effort by public libraries will be needed to meet the country's Universal Services goals with regard to the nation's rural populations.

Access to the Internet via Public Libraries from High Poverty Levels

The 1998 data indicate that 83.3% of the public library outlets serving communities with poverty levels of more than 40% have an Internet connection. But a context for this finding is that only 2.0% of all public library outlets (317 of the 15,718) serve communities with poverty levels of 40% of more. What is not known, however, is the extent to which there are *additional* communities with poverty levels of 40% or more that are not being served by a public library outlet -- to say nothing of library services that provide public access to the Internet. The issue of unserved populations by public library outlets requires additional study as Universal Service goals are implemented in high poverty areas.

Connection Speed and Type and Quality of Public Access Internet Services Provision

The fact that 66.4% of all public library outlets connected to the Internet that provide public access Internet services have connection speeds of 56kbps or higher, or that 21.9% of those connected have at least a T1 connection, again, suggests significant and ongoing improvement in the connection speeds used by public libraries. Connection speeds are critical for the provision of high quality services, Websites, interactive video, etc. But one must be cautious in explaining the data reported here with regard to public library services provision.

Simply because the data suggest that public libraries are increasing their use of high speed and dedicated lines for connectivity does not necessarily mean that they are *also* providing a range of high

quality, interactive, and useful services to their users with these improved connection speeds. The data suggest that public libraries increasingly have the capability to provide such networked-based services. But public libraries will need to move beyond connectivity issues and move into strategies for better services provision in the networked setting (Bertot and McClure, 1997). There is a need for additional study and research to know if, in fact public libraries are providing such services, what those services are, and the degree to which those services meet user or societal needs.

What Constitutes an Acceptable Level of Public Access to the Internet?

Yet to be resolved by policy makers and public librarians are guidelines or national standards that define and measure the concept of "public access to the Internet via public libraries." For example, if a public library outlet serving a rural community with high poverty (meaning few computers and modems at home) provides one 28.8kbps public access workstation for its entire legal population area of 48,950, does such constitute acceptable public access?

Data reported here may be useful (in conjunction with the 1997 data) to begin national discussions as to what constitutes *acceptable* levels of public access for communities served by public library outlets. The following factors appear to be important considerations in developing such guidelines:

- The number of public access workstations per legal population served;
- The speed of those public access workstations; and
- The level of home connectivity in a particular public library's legal population served.

Other factors may also be considered in such a debate. An implication, however, from data reported here and in earlier studies by the authors is that there continues to be a need to better define the term "public library provided public access to the Internet."

Impact of the E-Rate on Public Library Connectivity

As this Executive Summary is written in August 1998, there continues to be much contentiousness on the appropriateness of the E-Rate as administered by the Universal Services Fund as a means to reduce disparities in access to the Internet for those in high poverty regions. The issues and data are complex and cannot be reviewed in detail here although an earlier discussion offered by the authors is still useful (Bertot and McClure, 1997, pp. 8-9).

The data reported here suggest that there are disparities -- at least in terms of public library Internet connectivity. Regardless of one's position on the E-Rate and its appropriateness, the data reported here can provide an important benchmark for longitudinal tracking of connectivity, type of connectivity speed, and other topics related to public library access to the Internet. Assuming that some disbursements to public libraries occurs from the Universal Services Fund it will be important to assess the degree to which those libraries that received such funds improved connectivity and access versus those that did not receive funds.

Defining Public Library Service Area Poverty

This study made use of an innovative and previously unused method for determining public library outlet poverty status (as discussed in Appendix B[44]). To continue the evaluation process of public library outlet Internet connectivity in general and the impact of the E-Rate on public library

[44] In this presentation of the contractors' report, the methodology appears in Appendix C.

outlet connectivity in particular, there needs to be continued discussion and acceptance of an appropriate methodology to characterize public library outlet poverty status. Agreement by policy makers, researchers, and public librarians will enable the longitudinal collection of Internet-related data from public library outlets.

Linking Data to Policy Debates and Strategic Planning

The national studies of public libraries and the Internet completed in 1994, 1996, 1997, and 1998 provide a wealth of information that can inform national policy making and strategic planning for improved public library connectivity and networked-based services. Data from these studies as well as a number of other studies are important to consider as policy makers and the public library community consider the future role of public libraries in the National and Global Information Infrastructures (NII and GII).

Evidence continues to mount that there are a number of disparities in access and levels of connectivity among different segments of the population depending on their geographic location and the poverty level of the community in which they live. Recent data reported by the National Telecommunications and Information Administration concluded (1998, p. 2):

> The gap between the information "haves" and "have nots" widened in the last three years. Blacks and Hispanic Americans lag even further behind white Americans in computer ownership and on-line access despite significant growth in computer ownership and overall computer usage in America.

Disparities in access also exist in terms of ethnicity and level of household income (Benton Foundation, 1998). Given such data, the role of the public library as a "safety net" for all people to have access to networked information resources and services continues to be important -- particularly in light of the relatively low levels at which households in general have the required computer and online access (26.3%, NTIA, 1998).

As the nation approaches the new millennium and works to implement the Universal Service goals outlined in the *Telecommunications Act of 1996*, there is a need for a comprehensive review of data sources and policy issues related to public access to the Internet. This review should lead to a national debate to develop goals and strategies for how best to:

- Provide equitable access to the Internet and networked information services;
- Determine the role of the federal and state governments in implementing such goals; and
- Determine the degree to which public libraries should be part of the overall strategy.

Clearly, a strategic plan for accomplishing such goals will need the input from a number of stakeholder groups. But such discussions and strategic planning should begin soon if (1) disparities in access to and use of networked information resources and services are to be reduced in the near term, and (2) policy makers and librarians are to determine how public libraries can best contribute to providing equitable access for all members of the country.

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librarians who completed the survey. Again, the assistance of the FSCS Coordinators at the state level was essential in encouraging libraries to respond and obtaining a high response rate. Dr. Dean Jue provided geocoded data and contributed to the development of the study methodology. Dr. Keith Curry Lance also assisted significantly in development of the study methodology. Judy Russell and Howard Harris at the National Commission on Libraries and Information Science (NCLIS) and Andrew Magpantay at the American Library Association Office for Information Technology Policy (ALA-OITA) also provided guidance and suggestions for the development of the study and for specific analyses and presentation of the data. Such guidance offers readers the opportunity to view study data from multiple perspectives.

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